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## Table of Contents

VOL. V, No. III

### *Special Articles*

MEDICAL CARE OF THE VETERAN. Paul B. Magnuson, M.D. . . . .	175
POLYPOID DISEASE OF THE COLON. Louis A. Buie, M.D. . . . .	177
EMERGENCY TREATMENT OF APOPLEXY. Geza de Takats, M.D. . . . .	184
PUBLIC UNDERSTANDING OF THE VITAMINS. Robert S. Goodhart, M.D. . . . .	191

### *Diagnostic Clinics*

ANTIPERNICIOUS ANEMIA SUBSTANCES. Robert W. Heinle, M.D. . . . .	197
SURGICAL COMPLICATIONS OF PEPTIC ULCER. John D. Stewart, M.D. . . . .	205
DIET IN THE TREATMENT OF HYPERTENSIVE DISEASE. Irvine H. Page, M.D., A. C. Corcoran, M.D., and Robert D. Taylor, M.D. . . . .	211

### *Case Report*

DIAGNOSIS AND TREATMENT OF CYSTOSARCOMA PHYILLODES. Walter H. Gerwig, Jr., M.D. . . . .	219
--	-----

### *Statistical Survey*

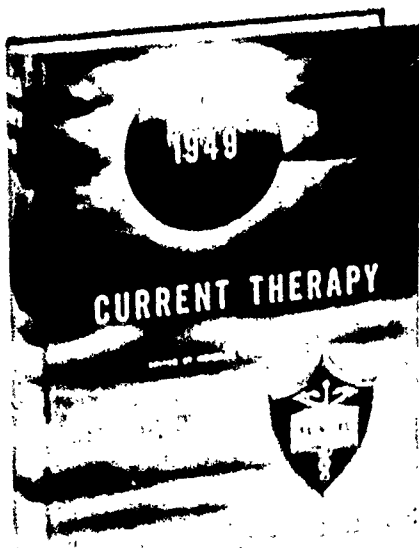
WHEN SHALL OVARIES BE REMOVED? Charles P. Larson, M.D. . . . .	224
---	-----

### *Scientific Exhibit*

CHRONIC SHOCK: THE PROBLEM OF REDUCED BLOOD VOLUME IN THE CHRONICALLY ILL PATIENT. J. H. Clark, M.D., W. Nelson, M.D., Champ Lyons, M.D., H. S. Mayerson, M.D., and P. T. DeCamp, M.D. . . . .	227
---	-----

### *Departments*

THE MEDICAL BOOKMAN. <i>Practice of Allergy</i> • <i>New Books Received</i> . . . . .	233
MEN OF MEDICINE. <i>Ernest Sachs, M.D.</i> . . . .	239
EDITORIALS. <i>Tast Force Medicine</i> • <i>Rehabilitation in the Management of Cardiovascular Problems</i> . . . . .	248
OFFICE PRACTICE. <i>Hemorrhoids</i> . . . . .	250
CONSULTATION SERVICE. <i>Ulcerative Colitis</i> • <i>Vitamin E for Angina Pectoris</i> • <i>Treatment of Boils</i> • <i>Indications for Tonsillectomy</i> . . . . .	252
NEW DRUGS AND INSTRUMENTS . . . . .	253
LEAVES FROM A DOCTOR'S DIARY. <i>Maurice Chidekel, M.D.</i> . . . .	256
MEDICAL NEWS ROUND-UP . . . . .	A-17
TRIBAL MEDICINE . . . . .	A-25



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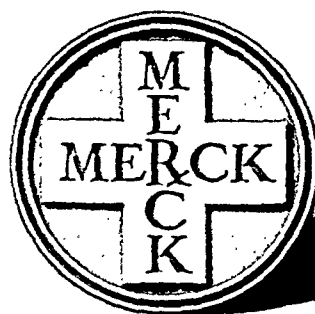
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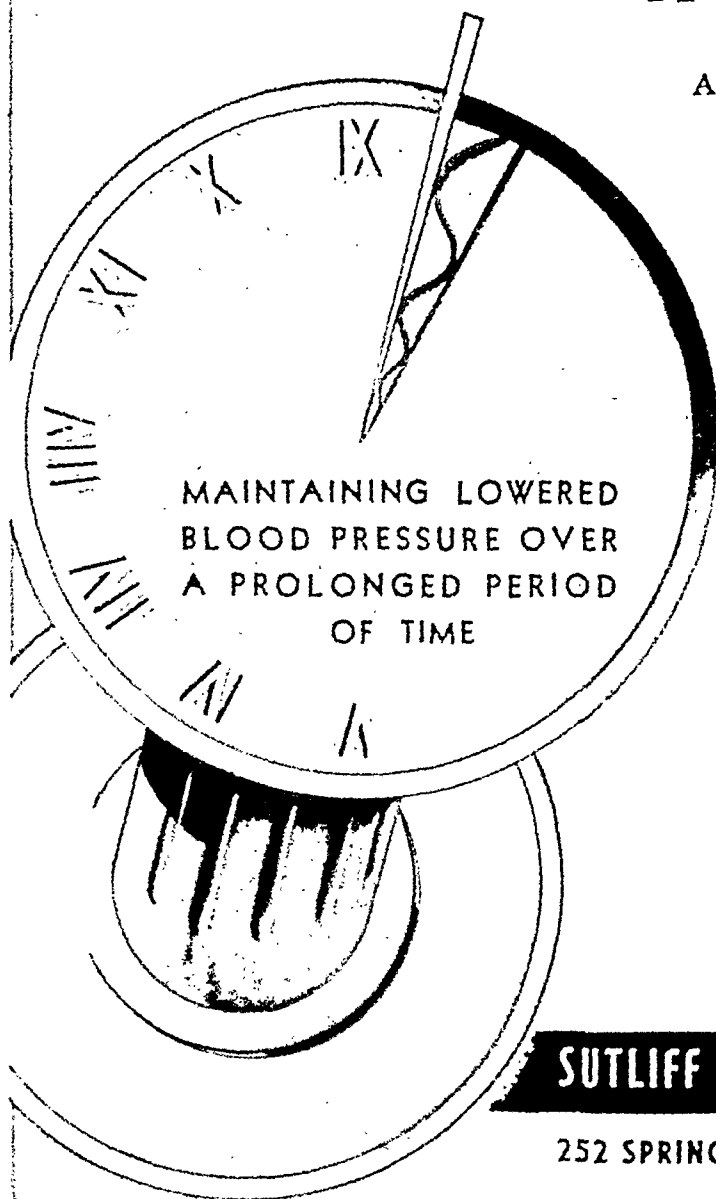
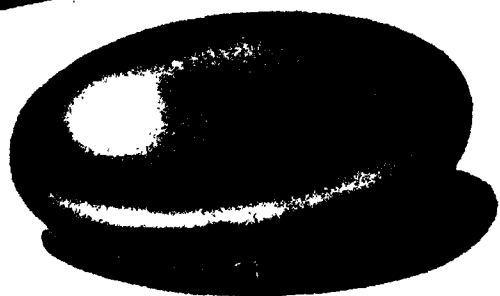
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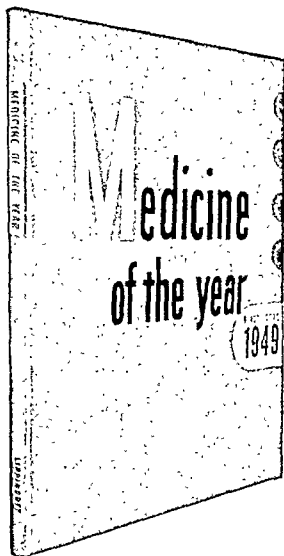
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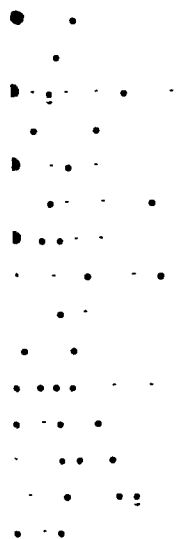
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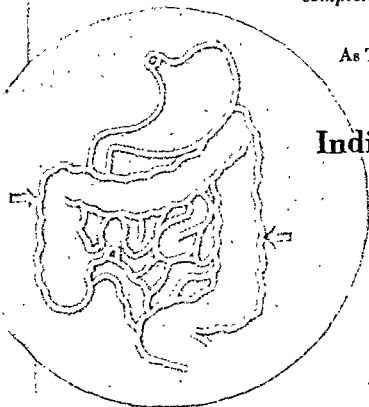
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**bibliography:** 1. Seneca, H., and Henderson, E.: *In press*. 2. Heinchen, T., and Seneca, H.: *Rev. Gastroenterol.* 15-611, 1948.

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# Medical News Round-Up

## ORGANIZATIONS AND INSTITUTIONS

Yale University and the New Departure Division of General Motors Corporation announce the joint sponsorship of a one-year clinical fellowship for a graduate course in occupational medicine, with the cooperation of the Bureau of Industrial Hygiene of the Connecticut State Department of Health. . . . Twelve national and Connecticut state health and education societies join forces with Yale University to offer a graduate seminar in school health education during the coming summer. The course, given for the first time last summer, is designed to meet the needs of elementary and secondary school teachers responsible for instructing or organizing health education programs. . . .

Establishment of the Patrick and Bertha Mooney Memorial Fund for the assistance of worthy students attending the University of Illinois College of Medicine is announced by Dean John B. Youmans. The fund was provided by Dr. F. P. Mooney of Philo, Illinois, a graduate of the University, as a memorial to his parents. . . . Dr. E. C. Hamblen, Duke Hospital endocrinologist, delivers the annual Bacon Lecture in Obstetrics and Gynecology at the University of Illinois School of Medicine, concluding a three-week lecture tour at western and southwestern colleges and conferences. . . .

The American Psychiatric Association plans a Mental Hospital Institute in Philadelphia April 11-15 under the program direction of Dr. Daniel Blain, the association's medical director. The institute, conceived as a workshop discussion, will start a drive to improve mental hospital services in the United States and Canada and will be open to professional and lay leaders in mental health work. The Association, in its newly compiled "Roster of Job Vacancies," reports nearly 1,000 jobs are unfilled because of lack of psychiatrists to fill them. Described as a substantial survey of jobs that need to be filled now, the report does not include all existing vacancies nor does it reflect the nation's overall need for psychiatrists, estimated at 15,000 by the U.S. Public Health Service. . . .

The Robert Gould Research Foundation of Cincinnati awards a \$5,000 grant to Dr. Elmer V. McCollum, Johns Hopkins professor emeritus of biochemistry, for research on amino acids. Among Dr. McCollum's earlier achievements have been the discovery of vitamins A and D and he is one of the co-discoverers of vitamin B-1. . . .

All aspects of the care of children with cleft palates or lips will be included in a new instruction and clinical training program established by the University of Illinois. The program will be available to specialists in a variety of professions, and a clinic for research, diagnosis and follow-up of children with cleft lips and palates is being set up. Primary financial support comes from the Children's Bureau, Federal Security Agency. . . .

A Cleft Palate Institute is established at Northwestern University for the study and treatment of cleft palate deformities, through cooperation of the schools of medicine, dentistry, and speech. A grant of \$25,000 from the Clara Abbott Fund of the University will partially support the unit, of which Dr. John R. Thompson is director. . . .

Institutes scheduled by the American Hospital Association for the next three months include one on Management and Operating Procedures for the Dietary Department, March 14-18, at Biloxi, Mississippi; Institute for Medical Record Librarians, April 4-8, Buck Hill Falls, Pennsylvania; Institute for Hospital Engineers, April 11-15, Buck Hill Falls; Institute on Hospital Purchasing, April 18-22, Washington, D.C.; Institute on Hospital Laundry Management, May 16-20, Chicago. The first in a planned series of annual courses in hospital housekeeping, to be sponsored by the Association, is set for April 4-May 27 at Michigan State College. The Association announces publication of the first two sections of a manual on Hospital Personnel Administration, being prepared to help guide administration staffs in developing satisfactory personnel programs. . . .

A record number of very young children in the United States, 4,000,000 under age five, is cited as a challenge to the nation's family and community services by Katherine F. Lenroot, Children's Bureau chief, addressing the National Commission on Children and Youth at Washington, D.C. Close study of taxation policies and public expenditures is urged by Miss Lenroot for their effects on child welfare. . . .

The Yale University School of Nursing celebrates its twenty-fifth anniversary with ceremonies in the Historical Library of Yale Medical School. The school, a part of Yale's Division of Medical Affairs and the only school of its kind requiring a college degree for admission, was authorized as the result of a gift from the Rockefeller Foundation. . . .

On the basis of a survey of its fertility services, the Medical Department of the Planned Parenthood Federation figures there are probably 600,000 couples in the United States whose infertility could be corrected. One out of every five involuntarily childless couples who come to fertility services achieve a pregnancy, the survey disclosed. . . .

With limited facilities and staff, the new University of Buffalo Rehabilitation and Information Center, established in conjunction with the medical school, is developing its scientific study to aid alcoholics. Patients are obtained by reference from courts, clergy, physicians, social agencies and other organizations and individuals. . . .

The American Red Cross authorizes the training of selected non-nurses as instructors for its basic home nursing course in communities where there are not enough nurse instructors. The broadened policy was adopted after a series of three successful experimental studies. . . .

The Veterans Administration authorizes the establishment of a radioisotope unit at the VA Hospital, Nashville, Tennessee, where research work will be directed toward development of improved methods for clinical diagnosis and medical treatment of veteran-patients. Radioisotopes to be used initially are radiophosphorus, radiosodium, radion and radioiodine. . . .

The 65th General Hospital is reactivated at the Duke University School of Medicine as an army reserve unit with Dean W. C. Davison, colonel in the Army Medical Reserve Corps, as commanding officer. . . .

U.S. Navy Hospital Corps schools at Great Lakes, Illinois, and San Diego, California, are now functioning as co-educational institutions, with selected members of the



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Syrup Sedulon, a new, non-narcotic cough preparation, usually controls "night cough" which robs the patient of needed sleep. Syrup Sedulon, given in therapeutic doses, seems to act specifically on the cough reflex without interfering with heart rate or respiration. Because of its mild sedative effect, the patient sleeps well, and next day experiences no after-effects. Sedulon, the unique active ingredient, has a wide margin of safety, is well tolerated, and remarkably effective even in persistent "night cough."

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waves assigned to the training courses. The women will compete with the men in all phases of promotion. . . .

The Association of Military Surgeons announces its next annual convention will be held November 10-12 in Washington, D.C., at the Statler Hotel. Rear Admiral Joel T. Boone, M.C., U.S.N., is new president of the organization. . . .

The Los Angeles County Medical Association Research Foundation is organized to foster studies on the cause, cure, and prevention of disease, to gather and administer funds for these purposes, and to disseminate information to the public on progress against disease. A non-profit, charitable organization, it includes most researchers in medical fields in the county area. . . .

The new University of Texas Postgraduate School of Medicine gets its first dean, Dr. R. Lee Clark, Jr., who has been director of the M. D. Anderson Hospital for Cancer Research, Houston. First courses to be offered will be short refresher courses for graduates. . . .

Dr. Ralph M. Chambers, former superintendent, Taunton State Hospital, Massachusetts, is named to the newly created post of Director of Inspection and Rating of Mental Hospitals in the United States, a function financed by a grant from the Psychiatric Foundation. . . .

Yale University School of Medicine unveils a portrait bust of the late Dr. Harvey Cushing, the work of Malvina Hoffman. The bronze sculpture, placed in the school's Historical Library, was provided by the Associates of the Yale Medical Library, made up of Yale medical alumni and Connecticut physicians. . . .

The Committee on Medical Education Centers of New York State University's board of trustees receives offers from several medical colleges to join forces with the new university. Institutions making the offer include the Long Island College of Medicine, Brooklyn, the Syracuse University College of Medicine, and New York University College of Dentistry, the latter reserving the right of control of its school. Plans of the state university call for one medical center in New York City and another in up-state New York. . . .

A grant of \$31,000 is made by the Commonwealth Fund of New York to the University of Pennsylvania for cancer research in the University's School of Medicine and Hospital. The appropriation is earmarked by the fund for use exclusively in the University's Gynecological Institute of Gynecological Research. . . .

Smith, Kline and French Laboratories of Philadelphia announce they awarded a total of 73 grants amounting to \$314,761 during 1948 in support of medical research. Receiving the grants were medical schools, institutes, clinics, and individual investigators. . . .

First joint meeting of the Honorary and Reserve Consultants to the Navy's Bureau of Medicine and Surgery is held at the National Naval Medical Center, Bethesda, Maryland, with 43 consultants and the presidents and presidents-elect of the American Medical and American Dental Associations present. . . .

The National Foundation for Infantile Paralysis, New York City, announces postgraduate fellowships available in public health, physical medicine, and for research in virology, orthopedic surgery, pediatrics, epidemiology, and neurology. Selection of candidates will be on a competitive basis and awards will be based on individual needs of applicants. . . .

Two gifts totaling \$65,000 are received by Northwestern University Medical School from the Lois Grunow Memorial Clinic, Inc., which was established in 1930 by William C. Grunow in memory of his young daughter to help improve surgical techniques and make good surgical care available to children. The gift will be allocated in the amount of \$50,000 in support of the department of surgery and \$15,000 for a surgery professorship. . . .

A fund to promote research in diabetes and the care of diabetic patients is created by several Cleveland citizens, with the expectation that private gifts will increase the fund in the future. . . . A \$5,000 grant for research on arteriosclerosis as a complication of diabetes is given to Dr. Arnold Lazarow and Dr. John W. Patterson of Western Reserve University by the American Foundation for High Blood Pressure. . . .

Western Reserve University's department of psychiatry is awarded grants of \$20,000 from the American Red Cross and \$37,500 from the U. S. Public Health Service. The Public Health Service contribution will cover a three-year period for undergraduate medical teaching. . . .

#### APPOINTMENTS, HONORS AND AWARDS

Dr. John S. Laughlin is appointed assistant professor of radiology and radiation physicist at the University of Illinois College of Medicine. Dr. Laughlin is working on the betatron project on the Chicago campus of the University. . . .

Dr. Howard McC. Snyder, wartime inspector of all medical operations for the War Department, is named special consultant to the New York State Hospital Study now being carried on at Columbia University. Dr. Snyder, retired last year as a major general after forty-one years of service, will devote full time to the study, undertaken for the New York State Joint Hospital Survey and Planning Commission. . . .

Dr. Clayton G. Loosli, associate professor of medicine at the University of Chicago, is named to take charge of the Division of Preventive Medicine and Public Health in the School of Medicine. An authority on respiratory diseases, Dr. Loosli also will direct the Influenza Detection Service established at the University recently by the U. S. Public Health Service. . . .

Albany Medical College, Albany, New York, announces the appointment of Dr. Thomas Hale as an associate dean and Dr. John K. Meneely, Jr., as assistant dean. Dr. Hale is director of the Albany Hospital, and Dr. Meneely is medical director of the hospital. . . .

Dr. George E. Farrar, Jr., associate professor of medicine at Temple University, is named medical director for Wyeth Incorporated, to advise Wyeth management on medical affairs and collaborate with Dr. Joseph Seifter, director of the Wyeth Institute of Applied Biochemistry, on medical phases of research. He will continue his post at Temple University. . . .

Commander Horace D. Warden, M.C., U.S.N., of the Bureau of Medicine and Surgery, is assigned as medical officer to the Presidential Yacht Williamsburg, relieving Commander Ashton Emerson, M.C., U.S.N. . . .

Dr. Kenneth S. Cole, professor of biophysics at the University of Chicago, is appointed Scientific Director of Medical Research at the Naval Medical Research Institute, National Naval Medical Center, Bethesda, Maryland. . . .

## FROM GALENICALS TO ACTIVE PRINCIPLES



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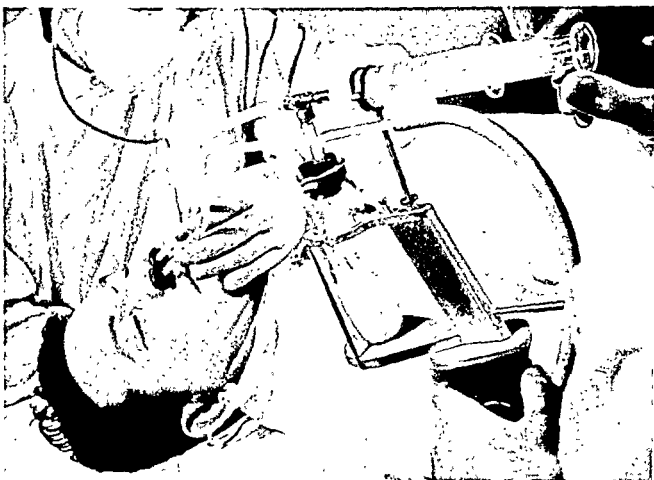
# Digitaline

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## METHOD DEVELOPED FOR TESTING COLD VIRUS

Nasal washings are collected by medical technician Donald Duncan and Dr. Leon T. Atlas of the National Institute's Common Cold Research Program. Sterile skim milk is circulated through the nostrils and nasopharynx of the volunteer who, a few days before, was inoculated with common cold virus.



Research in progress at the Laboratory of Infectious Diseases, National Institutes of Health, has produced a laboratory method to speed up testing of the common cold virus strain, MR-1. Dr. Leon T. Atlas and Dr. George A. Hottle report. MR-1 virus is the name given to the agent isolated and described by Dr. Atlas and Dr. Norman H. Topping. MR stands for "minor respiratory."

In their experiments the researchers have developed a method for chemical titration of MR-1 in allantoic fluids from embryonated eggs. Use of the Beckman spectrophotometer has been found to give an accurate test of titration when a tryptophane-perchloric acid procedure is followed.

The procedure involves precipitation of substances which produce a color reaction in virus-containing fluids. Amounts of infectious virus, in dilutions up to 10-8.5, have been determined by titration in embryonated eggs.

The method devised consists of adding cold methyl alcohol to virus-infected fluid and subjecting the fluid to centrifugation at 2,500 revolutions per minute for twenty minutes at 1°C. The fluid is poured off, leaving a pellet of sediment presumed to contain the virus. The pellet is resuspended, washed in distilled water and calcium acetate solution, and again centrifuged. The resulting second pellet is dissolved in tryptophane and perchloric acid by agitation and heating. Tubes containing the dissolved pellets are cooled, after which the color differences can be measured.

Tables included in the report show that positive and negative laboratory results tally with tests of the identical fluids on human volunteers. Before development of the color test, researchers could test only 52 samples of the cold virus in two years, with the aid of human volunteers. With

the laboratory method, 56 samples per day are routinely tested.

Now under investigation is the question of whether the substance responsible for the tryptophane-perchloric acid value is a virus constituent or a by-product of infection in the fluid. A study of the manifold properties of MR-1 virus is facilitated by the foregoing procedure. Possibility of isolation and study of other agents is suggested.

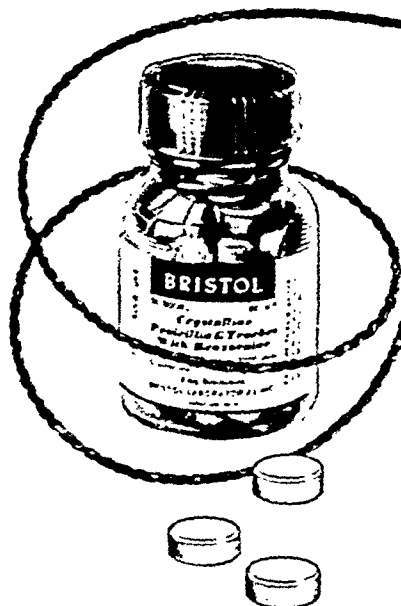
## PROGRESS IN MEDICAL SCIENCE

Biologic phases of the pollution research program at the Environmental Health Center, Cincinnati, of the U.S. Public Health Service are being expanded since enactment of the new Water Pollution Control Act. Both laboratory and field investigations are planned. . . .

Diagnosis of kidney cancer in the early stage by use of the smear test is announced by Dr. George N. Papanicolaou and Dr. N. Chandler Foot. Interpretation of the smear requires the services of a careful, discriminating and experienced cell specialist, Dr. Papanicolaou emphasizes. . . .

Attempts of anti-vivisectionists to "sabotage" medical research laboratory work is deplored by Dr. Walter K. Kraatz of the University of Akron, who declares funds and activities of these groups have increased since the war. Threat of interference by anti-vivisectionists necessitated secrecy in laboratories during the war to complete experiments in life-saving techniques, but humane treatment of animals is adhered to, and all bona fide medical research laboratories are open to inspection, Dr. Kraatz points out. . . .

# A STITCH IN TIME



*"... The prophylactic use of penicillin tends to reduce postoperative inflammation of the oral mucous membrane and the incidence of infection ... There is less postoperative pain and healing is more rapid." Faier, A.D.: The Prophylactic Use of Penicillin in Dental Surgery. Dental Digest, 153:336, July, 1947.*

For either prophylactic or therapeutic purposes, Bristol CRYSTALLINE PENICILLIN G TROCHES with Benzocaine provide an efficient means for controlling intraoral infections due to penicillin-sensitive organisms. Inserted into the buccal sulcus, the troche dissolves slowly, directly bathing all accessible mucous membranes with an effective and prolonged concentration of penicillin. In the presence of painful, inflammatory or traumatic mouth lesions, the local anesthetic effect of benzocaine will be found especially desirable.

Each pleasantly flavored troche contains 5000 units of Crystalline Potassium Penicillin G, and Benzocaine, 5 milligrams. They are available from your usual source of supply in bottles of 20.

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**Crystalline Penicillin G Troches**  
*with Benzocaine*



# COMING POSTGRADUATE COURSES

## East

### New York University-Bellevue Medical Center Post-Graduate Medical School, New York City

Regional anesthesia B-943, full time, May 2-13  
Cardiology B-349, full time, May 3-27  
Acute and chronic pulmonary diseases B-333, full time, May 2-6

Symposium on dermatology and syphilology B-1230, full time, May 23-27

Seminar in dermatological histopathology B-1210, full time, May 9-13

Gynecological endocrinology A-222, part time, May 3-June 25

Cystoscopy and endoscopy A-211, part time, May 16-June 20

Neurological and psychiatric diagnosis and treatment in general practice B-713, full time, May 9-21

Gynecology for general practitioners A-206, part time, May 2-June 13

Orthopedics in general practice B-520, full time, May 16-21

Practical clinical pediatrics B-413, full time, May 31-June 25

Review of clinical pediatrics B-415, full time, June 13-18

### New York Medical College, New York City

Endocrinology, full time, 3 weeks starting in May

### St. Francis Sanatorium for Cardiac Children, Roslyn, New York

Comprehensive postgraduate course in rheumatic fever and rheumatic heart disease, full time, June 1-14

### Harvard Medical School, Boston

Internal medicine 3, full time, June 20-July 29  
Internal medicine 2, full time, 3 months beginning June 1

Dermatology, half time, 1 month, May

### American College of Physicians, Philadelphia

Cardiology, full time, tentative date, May 2-7  
Endocrinology, full time, June 13-18

Physiological basis for internal medicine, full time, May 9-14

### University of Pennsylvania Graduate School of Medicine, Philadelphia

Bronchoesophagology, gastroscopy and laryngeal surgery, 2 weeks, June

### Tufts College Medical School, Postgraduate Division, Boston

Hematology II, full time, May 16-28

### Rutgers University, Extension Division, Newark, New Jersey

Short postgraduate courses in medicine, 6 weeks beginning May

### Foundation for Vision, Inc., The Ophthalmological Study Council, Boston

Lancaster courses, June 25-Sept. 10

## South

### University of Louisville School of Medicine and Kentucky State Medical Association, Louisville, Kentucky

Intensive refresher course in pediatrics, 3 days, June

Intensive refresher course in medicine and surgery, 5 days, June

Intensive refresher course in obstetrics and gynecology, 3 days, June

### University of Oklahoma School of Medicine and Oklahoma State Health Department, Oklahoma City, Oklahoma

Postgraduate course in psychiatry, May 9-11

### Tulane University School of Medicine, New Orleans, Louisiana

Review of obstetrics, June 6-18

### University of Georgia School of Medicine, Augusta, Georgia

Endocrinology, May or June (tentative)

## Midwest

### Cook County Graduate School of Medicine, Chicago

Course in gastroenterology, 2 weeks beginning June 27

Personal course in hematology, 1 week beginning June 27

Part time course in ophthalmoscopy of common conditions, 3 weeks starting May 10

### Michael Reese Hospital Postgraduate School, Chicago

Recent advances in internal medicine, full time, May 23-June 3

Rorschach course, part time, June 6-10

Recent advances in pediatrics, full time, May 16-28

### Children's Memorial Hospital, Chicago

Postgraduate conference in neuromuscular anomalies of the eyes, May 1-6

### University of Cincinnati College of Medicine and Society of General Physicians, Cincinnati, Ohio

Laboratory diagnosis and practice, part time, 1 month in May and June (tentative)

Office gynecology and urology, part time, May

### University of Minnesota Center for Continuation Study, Minneapolis, Minnesota

Dermatology, May 16-17

Cancer control, June 2-4

Proctology, April 11-16

Pediatrics, April 7-9

### University of Michigan Medical School Department of Postgraduate Medicine, Ann Arbor, Michigan

Summer session courses in anatomy, bacteriology and biological chemistry, 6 and 8 weeks, June 20-August 13

### University of Nebraska College of Medicine, Omaha, Nebraska

Refresher course for practicing physicians, 4 days, May

### State University of Iowa, Iowa City, Iowa

Conference on squint, May 23-28

### Hansel Foundation, St. Louis, Missouri

Practical allergy in otolaryngology, May 30-June 4

### University of Wisconsin Medical School, Madison, Wisconsin

Diagnosis and therapy of infantile paralysis, full time, June 20-25

### Western Reserve University School of Medicine, Cleveland, Ohio

Postgraduate lecture series in cardiovascular diseases, each Thursday, March 10-May 26

## West

### University of California Medical School, San Francisco

Endocrinology including diabetes, full time, June 20-24

Symposium on tumors, June 27-29

### University of Oregon Medical School, Portland, Oregon

Electrocardiography, June 13-17

Orthopedic surgery, May 23-27

### Oregon State Board of Health and Oregon State Medical Society, Portland, Oregon

Refresher lectures in pediatrics and obstetrics, May 16-27 (tentative)

# A STITCH IN TIME



"... The prophylactic use of penicillin tends to reduce postoperative inflammation of the oral mucous membrane and the incidence of infection ... There is less postoperative pain and healing is more rapid." Foster, A.D.: *The Prophylactic Use of Penicillin in Dental Surgery*. *Dental Digest*, 155:556, July, 1947.

For either prophylactic or therapeutic purposes, Bristol Crystalline Penicillin G Troches with Benzocaine provide an efficient means for controlling mucosal infections due to penicillin-sensitive organisms. Inserted into the buccal sulcus, the troche dissolves slowly, directly bathing all accessible mucous membranes with an effective and prolonged concentration of penicillin. In the presence of painful inflammatory or traumatic mouth lesions, the local anesthetic effect of benzocaine will be found especially desirable.

Each pleasantly flavored troche contains 5000 units of Crystalline Potassium Penicillin G, and Benzocaine, 5 milligrams. They are available from your usual source of supply in bottles of 20.

*Bristol*

Crystalline Penicillin G Troches  
with Benzocaine



# Tribal Medicine

It is a natural human tendency to be amused by the antics of the primitive witch doctor and to ridicule his attempts at healing. This attitude is based on a comparison of our up-to-date medical knowledge and achievements with the incantations, drum beating, and foul concoctions of the "Indian medicine man." We seem to have so little in common with him.

In a thoughtful and enlightening essay in the *Scientific American* for September 1948, Elizabeth A. Ferguson who is professor of sociology at Skidmore College and a student of primitive medical lore, calls to mind our indebtedness to "lesser breeds without the law" for many of our drugs and for methods of using them. The cabalistic, seemingly outrageous "rites," nevertheless quite often produce results, especially where nothing more serious than the vengeance of evil spirits accounts for human misery.

Exorcism is brought about by explaining to the patient a "reason" for his disability, and then establishing faith in the wierd procedures used to cast out the enemy.

The Eskimos believe that disease is due to some influence on the patient's soul by adverse spirits, and Africans conjure up displeasure of ancestral spirits offended in some manner by the distressed patient. Thus headache is due to a pounding on the brain by invisible gremlins—a thought which must have come to many of us when afflicted by cephalalgia.

Much of the alleged success of primitive doctors may be due to what we now call psychosomatic medicine. The unlettered are just as prone to nervous and mental ills as any twentieth century dowager. It is not to be taken for granted that "they have or had much less to worry about." Jealousy, envy, rage, covetousness, hatred are natural human passions and are not limited to any one race or clime. They are the concomitants of human existence anywhere at any time. Therefore, the shrewd physician must change the mental trend and substitute for it some desirable satisfying emotion. Such substitution must be based, however, on what seems to the patient to be "reason." They always want to be

"reasonable," and look for this quality in others; but sometimes they look in vain. In fact, such egocentric individuals have no notion of what reason is. They are seldom open to the conviction that they are in their present state through bad thinking. How to untangle such irrationalism is the chief task of the psychiatrist.

An American Indian suffering from rheumatism

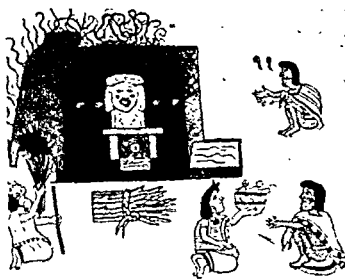
may be given a concoction made from the bark or roots of the willow tree on the assumption that a stiff joint may be "limbered up" through the flexibility of the willow which he sees and fully comprehends. But it so happens, we are told, that the willow contains some analgesic substances quite unknown to the recipient. Massage is thought to press out evil spirits, but it probably stirs up faulty circulation and brings fresh nutrition to an ailing member. Splinting of fractures is a procedure which would be

obvious to any human brain no matter how primitive. The lower animals, however, for example a rabbit with a broken leg caught in a trap, will amputate it with his teeth!

We are indebted to the aborigines for many drugs, especially to those in South America whence came quinine, camphor, ipecac, cocaine, and cascara sagrada. Laxatives are needed by savages as well as by the more civilized. The Indians among our southern neighbors use curare to poison their arrows and so make it impossible for their prey to run away. Today we are experimenting with this agent in reducing various spastic conditions. It is said that the Navahos utilize some 1,200 plants, few of which have been studied or analyzed in chemical or pharmaceutical laboratories.

Primitive surgery was performed, especially trephining of the skull, examples of which are in evidence in many museums. Bleeding was controlled by pressure and coagulants, and abscesses were opened by crude knives made of shell or stone, doubtless by poultices also, among which the flax seed poultice of a later day survives.

Anesthetics distilled from the leaves and roots of



*Pictographic representation of Aztec sweat bath.  
(After the Codex Magliabechi.)*

# CHOLINE (FLINT)

**FOR A BETTER PROGNOSIS  
IN CHRONIC HEPATITIS**



Until recently both the role of fatty infiltration in the etiology of human hepatic cirrhosis and that of the lipotropic agents in the prevention and reversal of fatty metamorphosis of liver tissue were dependent upon interpretations of relationships established in experimental animals.

Today, however, serial biopsy studies have developed the histogenesis of cirrhosis in the human from the earliest to the most advanced stage. From such studies it is evident that the earliest demonstrable stage of degeneration is that of a fatty liver, and that the transition of fatty infiltration into cirrhosis may be associated with a general nutritional deficiency and a specific lack of lipotropic substances.<sup>1</sup>

The institution of a proper dietary program has been shown to reverse the fatty changes noted in such biopsy studies in the human. The cirrhotic processes, however, have been observed to continue for variable periods before being arrested.<sup>2</sup> Delay of therapy may, therefore, result in permanent changes in the hepatic vascular system typical of the pattern in Laennec cirrhosis. Such findings re-emphasize the extreme importance of early diagnosis and treatment of hepatic dysfunction. **Choline** plays a significant adjunctive role in the dietary management of impending cirrhosis by effecting an early mobilization or utilization of excessive liver lipid deposits.

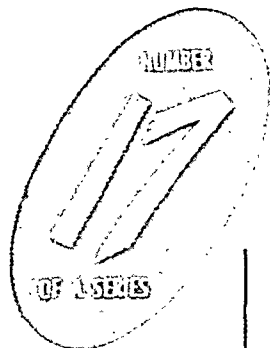
Syrup **Choline Dihydrogen Citrate (Flint)** is a completely stable and palatable source of the lipotropic agent **choline**. The specification of Syrup **Choline Dihydrogen Citrate (Flint)** will insure the patient acceptance necessary for protracted periods of **choline** therapy. Syrup **Choline Dihydrogen Citrate (Flint)** is a 25 per cent W/V solution, containing one gram choline dihydrogen citrate in each 4 cc.

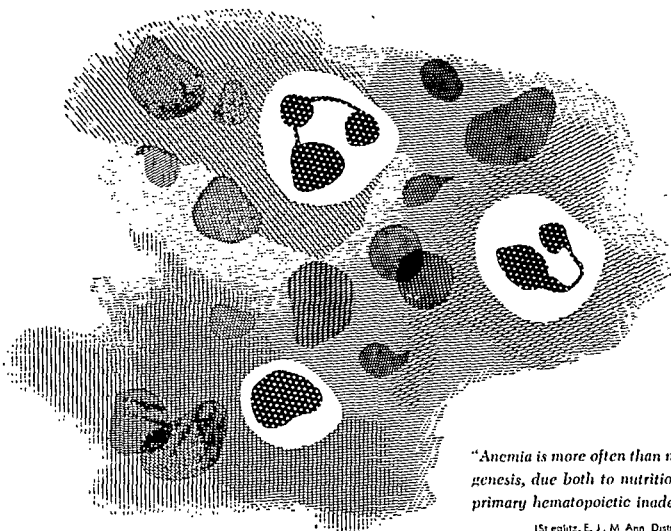
1. Moszkowitz, E.: Laennec Cirrhosis: Its Histogenesis with Special Reference to Role of Anapaprosis, *Arch. Path.*, 45:157 (1943).

2. Franklin, M.; Saks, M. R.; Stegman, F., and Pepper, H.: Clinical, Functional and Histologic Responses of Fatty Metamorphosis of Human Liver, *Amer. J. Clin. Path.*, 18:273 (1954).

For your copy of The Present Status of  
Choline Therapy in Liver Dysfunction, write:

**FLINT, EATON & COMPANY**  
DECATUR, ILLINOIS





*"Anemia is more often than not of mixed pathogenesis, due both to nutritional deficiency and primary hematopoietic inadequacy."*

ISreglitz, E. J. M. Ann. District Columbia 17:197, 1948

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**DESICCATED LIVER** for all secondary antianemia principles of whole fresh liver

**FERROUS SULFATE** for ferrous iron, the most effective form of iron medication

**ASCORBIC ACID** to aid absorption and utilization of iron

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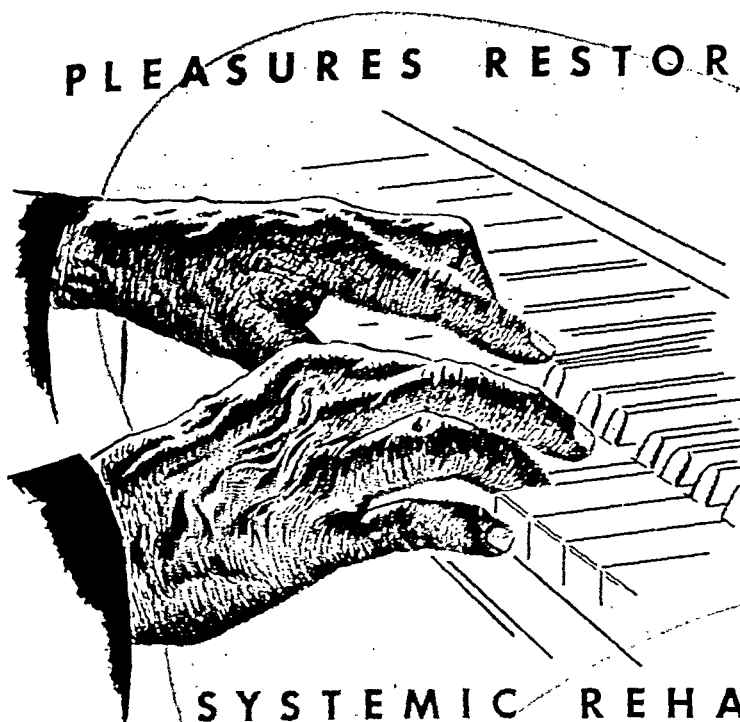
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### EACH CAPSULE CONTAINS:

Vitamin D (Irradiated Ergosterol)	50,000 U.S.P. Units
Vitamin A (Fish-Liver Oil)	5,000 U.S.P. Units
Ascorbic Acid	75 mg.
Thiamine Hydrochloride	3 mg.
Riboflavin	2 mg.
Pyridoxine Hydrochloride	0.3 mg.
Calcium Pantothenate	1 mg.
Niacinamide	15 mg.
Mixed Tocopherols	4 mg.

(Equivalent to 3 mg. of synthetic Alpha Tocopherol)

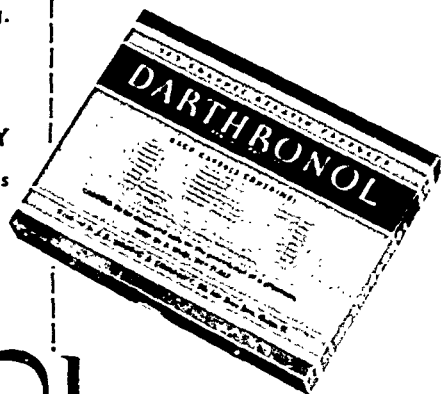
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Restoration of function can be accomplished in most arthritic patients by a complete systemic rehabilitation program. Darthronol is an integral part of such a therapeutic program. Its efficacy is due to the antiarthritic effects of the high dosage vitamin D together with the well-established nutritional influences of the eight other vitamins. Darthronol treats the arthritic—not merely the arthritis.



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*Deservedly a classic in the  
symptomatic treatment of coughs,  
Cheracol\* has long been use-tested  
and approved by physicians for . . .*

- 1 the efficacy of its sedative,  
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and
- 2 its palatable, clean,  
fruit-like flavor.

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\*Trademark Reg. U.S. Pat. Off.

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Chewing Aspergum promptly releases a soothing, constant flow of "salivary analgesia"—laving mucosal surfaces and reaching crypts often inaccessible to gargles or irrigations. Moreover, by encouraging gentle chewing and swallowing, Aspergum helps relieve local muscular stiffness and soreness.

Aspergum simplifies post-tonsillectomy care—shortens convalescence.

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*Dillard's*

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For more than two decades a dependable and welcome aid to patient comfort.

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There need be no lack of precision in the clinical administration of estrogens. Their physiologic effects are advantageous for three general purposes: to develop the genital tract, to reduce temporarily the functioning of the ovarian gland, and to arouse endogenous activity.

When menopausal symptoms are severe, a precision instrument is Estrogenic Substances-Breon. The solution alleviates the vasomotor and nervous symptoms.

In atrophic vaginitis Estrogenic Substances-Breon restores the vaginal epithelium to its normal state, including resistance to trauma and infection.

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Dihydrodifenyl Dipropionate Breon is supplied for administration by mouth in Capsules of 10, 15, and 20 mg. for parenteral use the same synthetic estrogen is available in ampuls of 1 mg.



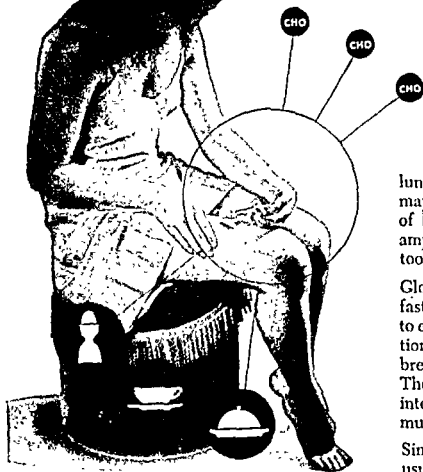
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ESTABLISHED 1912

*Estrogenic Substances*  
*Oil Solution BREON*

capsules of 10, 15, and 20 mg.  
and ampuls of 1 mg.  
for parenteral use

# Diabetes, diet and Globin Insulin . . .



**THE ADVANTAGES** of one-injection control of diabetes can, through adjustment of diet and dosage, be made available to the majority of patients requiring insulin. In view of the convenience and freedom afforded by the unique intermediate action of 'Wellcome' Globin Insulin with Zinc, the necessary adjustment is well worth while. Though not a complicated procedure, the regulation of carbohydrate balance warrants reiteration because of its importance:

**SOME FACTS ABOUT DIETARY ADJUSTMENT:** The distribution of carbohydrate in the meals must be adjusted in accord with the type of action exhibited by Globin Insulin, which is intermediate between regular and protamine zinc insulin. Proper carbohydrate distribution with proper insulin timing is essential; lack of balance may lead to poor control or to an erroneous impression of the characteristics of Globin Insulin.

A good carbohydrate distribution for the patient on Globin Insulin is to divide the total carbohydrate per day into 1/5 at breakfast, 2/5 at

lunch and 2/5 at suppertime. This initial diet may be adjusted in accord with the indications of blood sugar levels and urinalyses. (For example, a low blood sugar before supper indicates too little carbohydrate for lunch or vice versa.)

Globin Insulin is ordinarily given before breakfast. Onset of action is usually sufficiently rapid to eliminate the need for a supplementary injection of regular insulin. However, the amount of breakfast carbohydrate should not be too large. The right amount, as well as the optimal time interval between the injection and breakfast, must of course be determined for each patient.

Since the maximum action of Globin Insulin usually occurs in the afternoon or early evening, hypoglycemia is sometimes noted at this time. As a guard against it, the carbohydrate content of the noon meal may be increased, or a midafternoon lunch provided. Thus the original distribution of 1/5, 2/5 and 2/5 might, for example, require adjustment to 2/10, 5/10 and 3/10 or to 2/10, 4/10, 1/10 and 3/10. Once the balance of carbohydrate intake and insulin timing has been established, the patient must be impressed with the importance of adhering to the regimen.

'Wellcome' Globin Insulin with Zinc is a clear solution, comparable to regular insulin in its freedom from allergenic properties. Available in 40 and 80 units per cc., vials of 10 cc. Accepted by the Council on Pharmacy and Chemistry, American Medical Association. Developed in The Wellcome Research Laboratories, Tuckahoe, New York. U.S. Patent No. 2,161,198. LITERATURE ON REQUEST.

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*Swifter Recovery from*

**BURNS  
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Second and third degree burns  
involving 25% of body surface.



ure gauze dressings of White's Vitamin  
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White's Vitamin A&D Ointment induces rapid, healthy epithelialization and gratifying relief from discomfort in such conditions as: burns, slow healing wounds, indolent ulcers, avulsive injuries, various post-operative wounds, fissured nipples, and a variety of dermatologic conditions. White Laboratories, Inc., Pharmaceutical Manufacturers, Newark 7, N. J.

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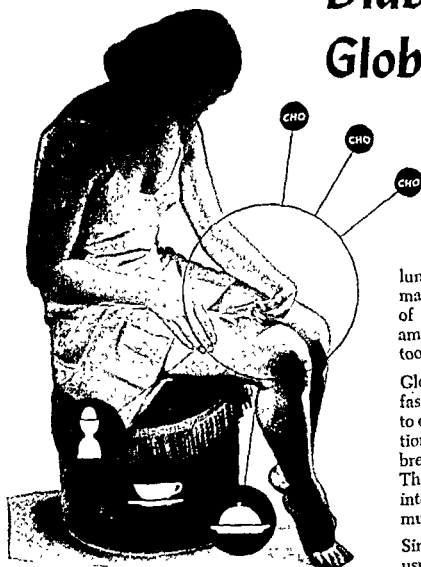
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**Ointment**  
*for faster healing*

Supplied in 1.5 oz. tubes, 8 oz. and 16 oz. jars and 5 lb. containers.

# Diabetes, diet and Globin Insulin...



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**F**IRST isolated in the Merck Research Laboratories in 1948, clinical studies have demonstrated that Cobione\* exhibits extremely high hematopoietic activity in the following conditions:

★ **PERNICIOUS ANEMIA**

In uncomplicated cases and those with neurologic involvement.

In patients sensitive to liver preparations.

★ **NUTRITIONAL MACROCYTIC ANEMIA**

★ **CERTAIN CASES OF MACROCYTIC ANEMIA OF INFANCY**

★ **SPRUE** (tropical and nontropical)

*Cobione\* Possesses Significant Advantages*

- It is a pure, crystalline compound of extremely high potency, and no known toxicity, when given in recommended dosage.
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- It is effective in extremely low doses, because of its remarkably high potency.
- It may be administered in precise dosage, because it is a pure, crystalline compound.

\*Cobione is the trade mark of Merck & Co., Inc. for its brand of Crystalline Vitamin B<sub>12</sub>.

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WILLIAM R. WARNER & CO., INC. is proud to present STIGMINENE\* BROMIDE 'Warner', an effective cholinergic compound of low toxicity, wide margin of therapeutic safety, and prolonged action.

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STIGMINENE\* BROMIDE 'Warner' is supplied in 1-cc ampuls of a 1:2000 solution, 0.5 mg. each; cartons of 12 and 50 ampuls.

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# liver disorders

cirrhosis  
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## methischol

(pronounced meth' is kol)



A synergistic combination of METHIONINE, CHOLINE and INOSITOL in a LIVER-VITAMIN B COMPLEX BASE ... lipotropic substances which favor the transport of fat from the liver to the fat depots of the body ... for prophylaxis, retardation and specific therapy in reparable liver damage.

each tablespoonful or 3 capsules contain:

dl-Methionine ..... 333 mg.  
Choline ..... 250 mg.  
Inositol ..... 166 mg.

together with the natural B complex from 12 grams of liver.

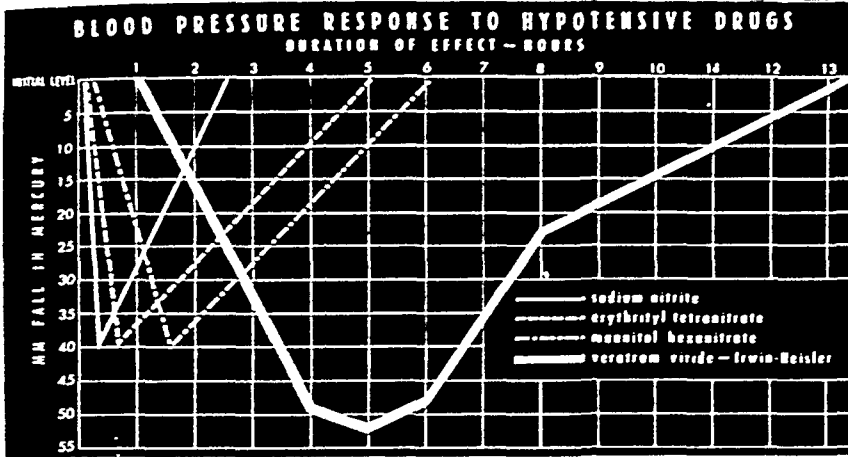
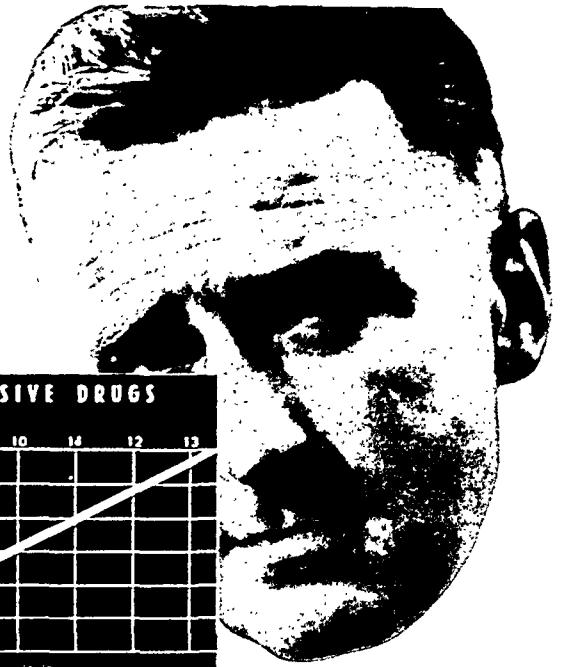
Supplied, in bottles of 100, 250, 500 and 1000 capsules and 16 oz. and gallon syrup.

### advantages of methischol

1. three efficient lipotropic agents.
2. natural B complex from liver.
3. essential, readily utilized METHIONINE.
4. well tolerated, non-toxic, convenient.

Detailed literature and sample.

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## *Prolonged Relief* FOR THE HYPERTENSIVE PATIENT

Veratrite affects a marked relief of headache, palpitation and dizziness in hypertensive subjects, together with a calm, gradual fall in blood pressure in the majority of cases of less-than-severe degree. The patient experiences a feeling of comfort and well-being. The prolonged effects of Veratrite are largely dependent upon its veratrum viride content in bio-assayed form. Veratrum viride, in Craw Units, has been established to have a hypotensive action for as long as 14 hours.

# Veratrite®

Each tabule contains: veratrum viride (bio-assayed) 3 Craw Units; sodium nitrite 1 grain; phenobarbital ¼ grain. Literature and samples on request.

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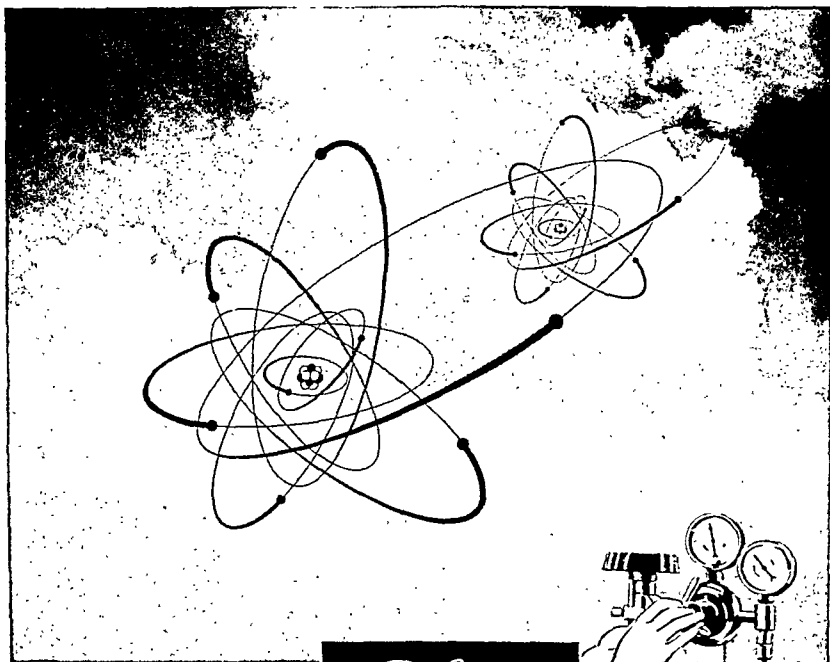



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## ***The Oxygen Molecule***

The oxygen molecule . . . symbol of life. Articles reporting the use of oxygen for therapy are constantly appearing in the medical literature. Digests of these important articles are given in the OXYGEN THERAPY NEWS, published monthly as a LINDE service so that physicians may quickly and easily keep up-to-date with the information in these reports. We shall be glad to send you the OXYGEN THERAPY NEWS upon request.

More and more, oxygen is being used as supportive treatment for diseases affecting the respiratory, circulatory, and central nervous systems, and for other conditions where anoxia is a factor. Medical reprints and references pertaining to oxygen therapy are also available.



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# MANDELAMINE

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**Urinary  
Antiseptic  
of Choice—  
in prolonged  
therapy or  
acute cases**

## OUTSTANDING FEATURES

- 1 No gastric upset
- 2 No dietary or fluid regulation
- 3 No supplementary acidification (except when urea-splitting organisms occur)
- 4 Wide antibacterial range
- 5 No danger of drug-fastness
- 6 Simplicity of regimen—3 or 4 tablets, t.i.d.

1. Butt, A. J.: J. Florida M. A. 35: 430 (Jan.) 1949.
2. Merricks, J. W.: West Virginia M. J. 44: 157 (June) 1948.
3. Carroll, G., and Allen, H. N.: J. Urol. 55: 674 (June) 1946.
4. Scudi, J. V., and Duca, C. J.: J. Urol. (Feb.) 1949.

\*MANDELAMINE is the registered trademark of Nepera Chemical Co., Inc. for its brand of Herydaline (methenamine mandelate).

MANDELAMINE\* continues to be acknowledged<sup>1,2,3</sup> as a urinary antiseptic of choice not only in typical uncomplicated cases, but also more resistant conditions requiring treatment over long periods.

### ***in prolonged therapy—***

*Sustained Effectiveness and Safety When Therapy Must Be Prolonged.* MANDELAMINE, because of its undiminished antibacterial effectiveness, patient-acceptance, and virtual freedom from untoward reactions, is a logical choice when chemotherapy must be prolonged,<sup>1,4</sup> or when the infection becomes resistant to other medication.

### ***in acute cases—***

*Rapid Results in Common Urinary Infections.* Carroll and Allen<sup>3</sup> obtained successful results in approximately 74 per cent of 200 cases of common urinary-tract infections—often in as few as three days.

SUPPLIED: Enteric-coated tablets of 0.25 Gm. (3½ grains), bottles of 120, 500, and 1,000.



**NEPERA CHEMICAL CO., INC.**  
*Manufacturing Chemists*

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# SHOW IRON IS BY MOLYBDENUM

HEMOGLOBIN INCREASES (Gm. per cent)	1.0-2.0	2.1-3.3	3.4+
Molybdenized Ferrous Sulfate	21.8%	56.3%	21.8%
		78.1%	
Ferrous Sulfate	77.7%	22.2%	0
		22.2%	
Ferrous Sulfate with liver-stomach extract or folic acid	70%	30%	0
		30%	

Adapted from Chesley and Annitto

## FINDINGS CONFIRMED

In a separate study recently reported by Dieckmann<sup>2</sup>, almost identical conclusions were reached with regard to the antianemic superiority of Mol-Iron:

"Treatment with ferrous or ferric iron alone or with various vitamin combina-

tions did not cause a significant increase in the rate of hemoglobin formation. A molybdenum-iron complex has resulted in a rapid increase in hemoglobin concentration."

*White's* **Mol-iron** *Tablets, Liquid*  
MOLYBDENIZED FERROUS SULFATE

a specially processed, co-precipitated, stable complex of molybdenum oxide 3 mg. (1/20 gr.) and ferrous sulfate 195 mg. (3 gr.). In bottles of 100 and 1000 Tablets. Also available in a highly palatable Liquid, in bottles of 12 fluid ounces.

WHITE LABORATORIES, Inc., Pharmaceutical Manufacturers, Newark 7, N. J.

# NEW CLINICAL STUDIES POTENTIATED

Hypochromic anemia of pregnancy has been found resistant to ordinary iron preparations. An agent which produces a superior therapeutic response in this type of anemia is, therefore, of significance in the treatment of all hypochromic anemias.

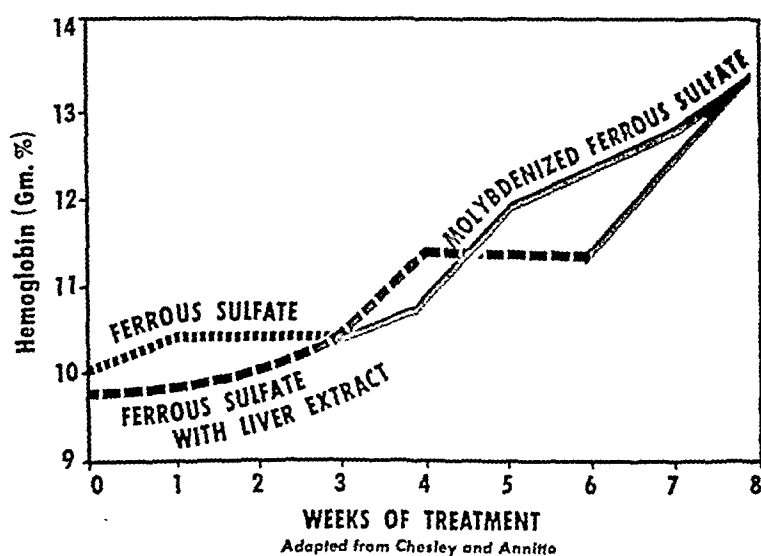
Recently reported, a comprehensive two-year study<sup>1</sup> at the largest maternity hospital in the United States conclusively demonstrated the antianemic superiority of molybdenized ferrous sulfate (Mol-Iron) over plain ferrous sulfate and mixtures of iron and liver-stomach extract or folic acid.

1. More rapid hemoglobin elevation.
2. Greater quantity of hemoglobin increase.
3. Better gastro-intestinal tolerance.

## A SIGNIFICANT DIFFERENCE

"... molybdenized ferrous sulfate produced a substantially more rapid therapeutic response than ferrous sulfate, the difference in response being statistically significant. Addition to ferrous sulfate of either liver-stomach extract or folic acid

did not potentiate the action of the iron salt . . . None of the patients treated with molybdenized ferrous sulfate complained of more than mild digestive symptoms related to the medication . . ."



Renewed hemoglobin synthesis in two cases treated with molybdenized ferrous sulfate following suboptimal response to ferrous sulfate with and without liver extract. The solid lines indicate added hemoglobin rise from Mol-Iron therapy.

1. Chesley, R. F., and Annitto, J. E.: Evaluation of Molybdenized Ferrous Sulfate in the Treatment of Hypochromic Anemia of Pregnancy. Bulletin of the Margaret Hague Maternity Hospital, 1:65 (Sept.) 1948.

2. Dieckmann, W. J., Priddle, H. D., Turner, R., and Treptow, B.: Proceedings, Central Society for Clinical Research, 21:88 (1948).



Chronic osteomyelitis of 12 years' duration after compound fractures of leg. 14 surgical procedures failed to close the cavity. Pain and foul-smelling discharge caused patient to request amputation.



Treatment with Chloresium brought progressive closure of the cavity. Purulent drainage and odor stopped. Pinch grafts of granulation tissue at base were successful and cavity closed completely.

## CHLOROPHYLL HEALED where other methods of treatment failed

● The case shown above is one of hundreds which resisted other methods of treatment—until Chloresium therapeutic chlorophyll preparations were used. The published record\* shows that the great majority of them not only responded rapidly to Chloresium's chlorophyll therapy, but healed completely in a relatively short time.

### Faster healing of acute cases

Results with Chloresium in acute wounds and burns have been equally dramatic. Faster healing, less infection, less scar tissue formation have been obtained. In addition, Chloresium provides quick deodorization of foul-smelling conditions.

This new approach to prompt, effective healing is due to Chloresium's proved ability to stimulate normal cell growth. Now, for the first time, you can give positive help to tissue in repairing itself. Try it on your most resistant case—it is completely nontoxic, bland and soothing.

# Chloresium

REG. U. S. PAT. OFF.

Solution (Plain): Ointment: Nasal and Aerosol Solutions

Ethically promoted—at leading drugstores

\*BOEHME, E. J.

The Treatment of Chronic Leg Ulcers

The Lasey Clinic Bulletin, 4:242 (1946)

BOWERS, WARNER F.

Chlorophyll in Wound Healing and Suppurative Disease

Amer. J. Surgery, LXXIII:37 (1947)

CADY, JOS. B. and MORGAN, W. S.

Treatment of Chronic Ulcers with Chlorophyll

Amer. J. Surgery, LXXV:4 (1948)

JOHNSON, HAROLD M.

Dermatologic evaluation . . .

Arch. Dermat. & Syph., 57:348 (1948)

LANGLEY, W. D. and MORGAN, W. S.

Chlorophyll in the Treatment of Dermatoses

Penn. Med. Journal, Vol. 51, No. 1 (1948)

RAFSKY, HENRY A. and KRIEGER, CHARLES I.

Treatment of Intestinal Diseases with w/o. of w. s. Chlorophyll

Vol. 15:549 (1948)

NEW—Chloresium Dental Ointment and Tooth Paste now make chlorophyll therapy available for the treatment of Vincent's infections, gingivitis and other periodontal diseases.

### FREE—CLINICAL SAMPLES

RYSTAN CO., INC. Dept. P&S.

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I want to try Chloresium on my most resistant case. Please send me, without obligation, clinical samples and complete literature.

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*Now Available*  
**IN AN ADDITIONAL POTENCY**  
*to meet the requirements  
 and requests of many physicians*

**THE NEW STRENGTH** —  $7\frac{1}{2}$  gr. enteric-coated, green tablets with  $\frac{1}{4}$  gr. phenobarbital, has been formulated for physicians wishing to prescribe the same effective amount of Theobromine Sodium Acetate, but with less amount of sedative.

*Complete List of Potencies—*

**THESODATE**

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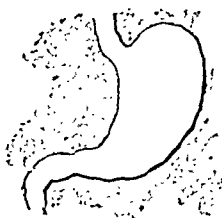
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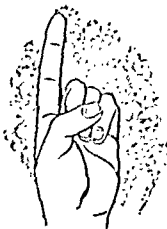
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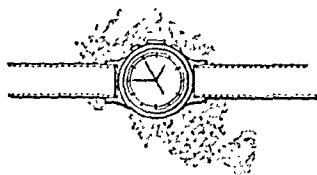
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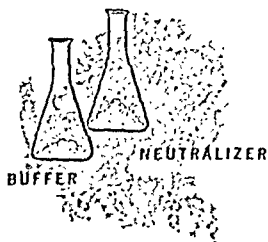
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# Medical Care of the Veteran

PAUL B. MAGNUSON\*

VETERANS ADMINISTRATION, WASHINGTON, D.C.

**D**URING the past few years many of my friends throughout the country have accused me of being a bureaucrat because of my association with the Federal Government, or more specifically, with the Veterans Administration. I want to take this opportunity to demonstrate to you that we in the Veterans Administration are not attempting to practice bureaucratic medicine, but that on the contrary our plans call for the practice of medicine on the level of the local communities in which the VA installations are located.

I first entered the Veterans Administration picture in 1942. At that time we had over 10,000,000 men in the armed forces and it seemed to me there was a need for planning for the expansion of veterans hospitals. With that thought in mind I prepared a plan for the administration of veterans hospitals which I believed would overcome most of the objections to the operation of such hospitals in the past, and I journeyed to Washington to discuss my plan with General Hines, who was then the Administrator for Veterans' Affairs.

Nothing further happened until 1945, when General Bradley became Administrator of Veterans' Affairs and brought with him as his Chief Medical Director General Paul R. Hawley. Shortly after they entered on the job General Bradley and General Hawley called on me and discussed the ramifications of my plan, with the result that I, too, went to Washington with a promise from General Bradley that I would have a free hand in implementing the plan. Incidentally, when I agreed to come to Washington I asked my school, Northwestern University, for six months' leave, intending to stay only that long, which shows the exaggerated ego some of us have when we take on a new job.

On my arrival in Washington I learned that professional personnel in the Department of Medi-

\*Chief Medical Director, Department of Medicine and Surgery, Veterans Administration, Washington, D.C.

Presented November 9, 1948, before the meeting of the Interstate Postgraduate Medical Association of North America, Cleveland, Ohio.

cine and Surgery were rated under Civil Service classification standards and all men in the department had to come off Civil Service rolls. This was, in my opinion, an obstacle to the proper implementation of the program as we planned it. Fortunately, Generals Bradley and Hawley had already recognized that medical men could not work successfully, if hampered by too many regulations, and had had a bill introduced into Congress which subsequently became Public Law 293, which removed doctors, dentists, and nurses in the Veterans Administration from Civil Service jurisdiction and placed them under a special professional personnel system under the control of the Department of Medicine and Surgery. This bill was signed by the President early in 1946, and we proceeded to install our plans, which in effect are as follows:

We in Washington make no attempt to practice medicine in any part of the country, not even in Washington. Instead, we ask the doctors in each local community to participate in the treatment of patients who are charged to the Veterans Administration by law. We appoint full-time medical men in our teaching hospitals only on the recommendation of the Deans Committees, which are committees consisting of faculty members of medical schools in the communities served by our VA hospitals. As a result our staff in these hospitals consists of top-flight men, including many professors from medical schools who are now full-time chiefs of service in veterans hospitals. Throughout the country the medical schools have taken hold and we now depend on them for recommendations for the selection and appointment of residents, attending physicians, and consultants.

In most of the outlying hospitals which are not connected with medical schools we have consultants visiting at least once a week to make ward rounds, examine patients, and give seminars and lectures to which the medical profession in the community is invited.

In addition, in hospitals in communities where there are no medical schools, we use men in the

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community for staffing on a consultant and attending basis. We cannot have residents in all of these hospitals because there are not enough specialists available to conduct firm residency training programs, but we do have consultants going there constantly to give instruction. We also have a system whereby any hospital can invite any specialist, from anywhere within the continental limits of the United States to come and examine patients, lecture, and give seminars. We in Washington do not tell them whom to have; all we do is give them the money to pay these specialists.

We are making an effort to put the care of veterans, with which the Veterans Administration is charged by law, in the hands of the local medical men, and to pay them for it. Our hospitals run, as nearly as we can run them, on the same principle as university or teaching hospitals. We will help to spread the medical knowledge that we gain constantly to the men who are busy practitioners and do not otherwise have the time to keep in touch with the latest developments in medicine.

Our medical program also includes the outpatient clinics at regional offices throughout the country. These clinics are established for treatment

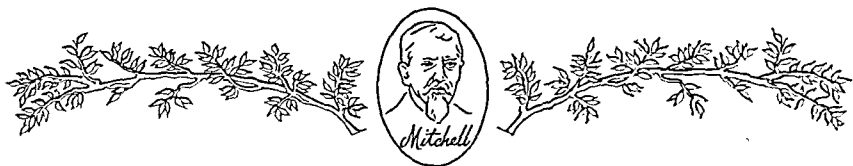
of service-connected conditions only, on an outpatient basis. At the present time, we are not completely satisfied with the condition of these clinics, but we are constantly endeavoring day by day to improve the quality of treatment.

SOMEbody says, "What about the nonservice-connected disabilities? What about the fellows who can afford to pay a fee but who are going into veterans hospitals?" Let me tell you how the law reads, then it is up to you to correct that. The law says that if there is a vacant bed in a veterans hospital, a nonservice-connected veteran can demand that he be taken into the hospital. Most of them are medically indigent. They have to sign what we call a Form P-10, which veterans organizations call a "Pauper's Oath," in order to get this medical service. That P-10 provides for a thousand dollar fine if it is sworn to falsely, but it is also provided in the law that the Veterans Administration cannot go behind the statement of the veteran and attempt to prove whether or not it is true.

We naturally feel that people should not impose on this sort of service, but I suppose the better the service gets the more we will be imposed upon. There is some abuse of the privileges granted by this law, but the number of cases is actually very small. At any rate, we in the Veterans Administration are powerless under the law. We cannot change the law. If it is to be changed it is up to somebody else.

We now have 126 hospitals accommodating over 108,000 patients. In addition, Congress has authorized the construction of more hospitals, which when completed will give us a total of approximately 141,000 beds. It is said that we cannot possibly staff properly for more than 120,000 beds, and so we will probably be accused again of practicing or trying to extend the practice of bureaucratic medicine. I have tried to show you this evening that such is not our intention.

We in the Veterans Administration are attempting to administer the laws passed by Congress to the best of our ability. If you, as members of the medical profession, object to some phases of our program you can help change them by using your influence with your neighbors. They are the taxpayers and the voters, and as we observed on November 2, the final determination on the policies of the Government of this country rests with them.



# Polypoid Disease of the Colon

LOUIS A. BUIE\*

MAYO CLINIC, ROCHESTER, MINNESOTA

PROBABLY 12 to 14 per cent of persons more than 40 years of age have polyps in the colon. One of every 10 persons of this age group has a polyp which can be discovered on proctoscopic examination. Recently 910 patients, who made no complaint of abnormal intestinal habits, were examined proctoscopically at the Mayo Clinic and, in the terminal portions of the colons of 76 of them, polyps were discovered. This incidence of almost 10 per cent does not differ materially from that obtained from examination of patients who complain of abnormal intestinal habits.

All polyps situated within reach of the proctoscope should be destroyed forthwith and, as will be shown, most of them can be destroyed by fulguration. This is not to imply that polyps which occur higher in the colon should be considered benign. They, also, should be destroyed but their destruction falls in the field of general surgery.

Approximately 30 per cent of colonic polyps are situated in portions of the colon which cannot be inspected on proctoscopic examination. One may well devote thought to methods of detecting these growths, many of which are so small that they cannot be discovered on roentgenologic examination.

All polyps of the colon are cancers (carcinomas) or will become cancers if they are not destroyed and if the patient lives long enough. This extreme

belief is a safe one to hold and there is much evidence, not always controlled of course, to support it. For example, Brust and I<sup>1</sup> studied the records of 200 patients who had polyps which could be seen through the proctoscope. All of these patients were advised to permit destruction of the polyps by fulguration. Four of the patients refused to accept this advice. All 4 returned within three years complaining of intestinal symptoms and, in examination of each, a cancer was found at the site of the polyp which had been discovered by us. (Figure 1.) Further evidence of the probable significance of the relationship between polyps and cancers is the fact that 25 to 30 per cent of all patients who have cancers of the colon have associated polyps and usually the polyps are situated in the tissues adjacent to the malignant growths. It is known, also, that most polyps possess adenomatous structure and many of them undergo various degrees of malignant change. I believe, as I said at the outset of this paragraph, that all polyps of the colon would develop malignant characteristics should their hosts live long enough.

Therefore, the most important question concerning polypoid disease of the colon is not *whether* something should be done about the lesions but *what* should be done.

We physicians know how the disease manifests itself and we know what symptoms it produces. We know the distribution by age and sex and the comparative frequency with which polyps involve the various segments of the colon. We understand

\*Section on Proctology, Mayo Clinic, Rochester, Minnesota.

Presented November 10, 1948, before the meeting of the Interstate Postgraduate Medical Association of North America, Cleveland, Ohio.



LOUIS A. BUIE

the morphologic characteristics of the growths in all types of polypoid disease and we are aware of the tendency of certain types of polyposis to "run in families." Nevertheless, despite the fact that this condition is so accurately known, methods of therapeutic attack are limited and, when applied, often are attended with discouragement.

The morphologic characteristics of the growths in polypoid disease vary widely but the distribution of polyps of the colon shows certain definite tendencies. Consequently, several significant factors must be considered when an attempt is made to determine the method of treatment which should be utilized in any particular case. I shall explain these factors and shall discuss the type of treatment which I believe is indicated.

Half of the polyps of the colon are small, sessile excrescences, 2 to 8 mm. in diameter. Most of these small, tuft-like lesions are discovered in the course of routine proctoscopic examination and, as a rule, they bear no relationship to the chief complaint of the patient. In fact, owing to the minuteness of the lesions, practically none of these patients is aware of disability referable to the bowel. Many are small mammillations which cast doubt concerning their

significance in the mind of the physician, but he should never disregard them. Large, sessile polyps are even more important. (Figure 2.)

#### LARGE, SESSILE POLYPS

A sessile polyp, 15 mm. in diameter or larger, requires particularly serious consideration. Polyps may attain enormous proportions and fill the rectal ampulla or other segments of the colon. They may grow from a small portion of the bowel wall or the mucous membrane may become occupied by a polypoid mass which leaves little or no normal tissue within the diseased segment. (Figure 3.)

Repeated microscopic examination of polyps of all classifications may disclose no malignant change but, just as often, such transition will be discoverable. Therapeutic measures which should be applied in the presence of such massive involvement of the colon are essentially the same as those which are employed in connection with malignant colonic disease. All effort should be directed toward eradication of the tumor and of the segment of colon which is involved. Complete destruction of the lesion, of the portion of bowel wall to which it is attached, and of the tissues adjacent to the bowel wall may be possible by fulguration and should be given proper consideration. By this method, often, the disease can be eradicated, continuity of the bowel can be maintained, and performance of colostomy may be avoided.

AT THIS point I should emphasize the significance and the importance of the physician's attitude when colostomy is being discussed with his patient. Patients have a horror of colostomy and they cannot be blamed for that, but I have profound lack of regard for a physician who will join with his patient and express a sentiment which may carry just enough weight to influence the patient against acceptance of a surgical operation which might save his life. It is the duty of the physician to explain to his patient that the colonic stoma can be cared for with little effort and that, by the use of proper dressings and abdominal supports, little inconvenience is experienced. The patient should know that these factors are insignificant when compared with the major considerations.

As I have implied, if a solitary lesion is situated in a portion of the bowel which can be reached through the proctoscope, if it is not too large, and



Figure 1. Resected specimen of adenocarcinoma of the rectum. The peculiar alteration in the mucosa adjacent to the lesion and the sentinel polyp near the bottom of the specimen can be seen.

if destruction of the lesion along with that portion of the bowel wall to which it is attached will not injure vital structures adjacent to the bowel, fulguration can be employed. If such a lesion is discovered in a portion of the colon which lies within the peritoneal cavity, or which is adjacent to such structures as the urinary bladder, the uterus, the vagina, the prostate gland and other pelvic structures, then laparotomy should be performed and the tumor should be resected.

The type of operation which should be employed depends on the position, size, and morphologic characteristics of the growth. If it is attached to the bowel wall by a pedicle, incision of the colon, followed by ligation and excision of the polyp near the base of the pedicle, and immediate closure, will



Figure 2. A small, single polyp.



Figure 3. Sessile polyp.

suffice. If the bowel wall is involved in the pathologic process, often it is necessary to take away that portion of the bowel which is diseased, in much the same manner as that employed when dealing with carcinoma.

#### PEDUNCULATED POLYPS

Some polyps are attached to the wall of the colon by stems of mucous membrane and muscularis mucosae. Sometimes the serosal surface of the bowel is drawn into this pedicle. The diameter of the body of the polyp varies from a few millimeters to that of a mass which may fill the lumen of the bowel. The length and diameter of the pedicle vary widely. These polyps may occur singly or in scattered collections. Most single polyps of this type can be eradicated by fulguration and it is advisable to use this method instead of applying a loop cautery. The latter may cut into the sub-

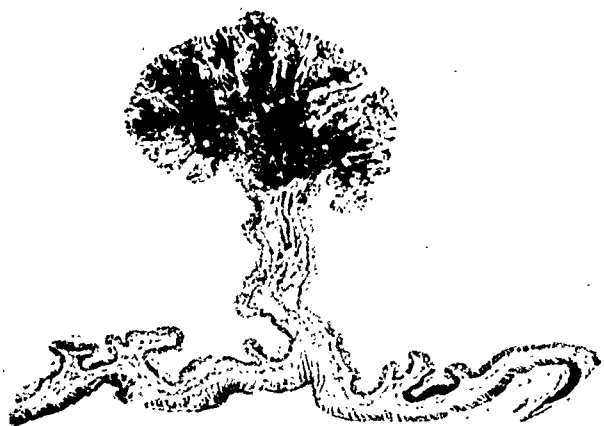


Figure 4. Mounted specimen of large pedunculated polyp. Such a tumor will slough away following fulguration of its stem.

stance of the polyp or the pedicle and cause dangerous hemorrhage. (Figures 4 and 5.)

The view has been advanced that the cautery should be employed so that a specimen can be obtained for microscopic examination. Such a specimen can be obtained with a biopsy forceps prior to fulguration but the factor of safety would prejudice most competent physicians in favor of fulguration. Furthermore, I doubt that the discovery that a polyp is benign would alter the treatment.

#### DIFFUSE POLYPOSIS

In this condition, little or no normal wall is left within the segment of colon which is involved. "Multiple polyposis," "disseminated polyposis" and "polypoidosis" are terms used to designate the condition. Total involvement of the bowel wall is one of the distinguishing characteristics of the disease but, in addition, the wall itself may be altered by diffuse hyperplasia of the mucous membrane. Sometimes polyps with pedicles, sessile polyps and diffuse hyperplasia of the mucous membrane are associated in this disease and often the condition is part of a form of polyposis in which the wall of the entire colon is occupied by polyps. (Figure 6.)

For treatment of this condition, fulguration should be employed only when other types of treatment are contraindicated; for example, radical surgical operation may be contraindicated because of some systemic disorder. Fortunately, massive or disseminated involvement of the bowel is seen



Figure 5. A large polyp. Such a tumor in the sigmoid may produce symptoms because of hyperactivity due to its presence. The muscular layer is drawn into the pedicle. Application of a snare to such a pedicle might result disastrously.

rarely. In a recent review of a large series of records of patients with polypoid disease of all types, I found that there were only two instances of disseminated polyposis in which it was felt that fulguration should be adopted.

#### "MULTIPLE POLYPOSIS"

In this category are included, at one extreme, patients whose condition may be totally unproductive of signs or symptoms and, at the other, the individuals whose colons are completely involved by diffuse hyperplasia and polyps. This is the hereditary type of the disease and is the condition which is known as "multiple polyposis." Colectomy is the only successful treatment for this condition. However, by removing that part of the polyp-bearing colon which is not accessible through the proctoscope, and then applying fulguration to that portion which is thus accessible, the resection can be reduced to partial colectomy. (Figure 7.)

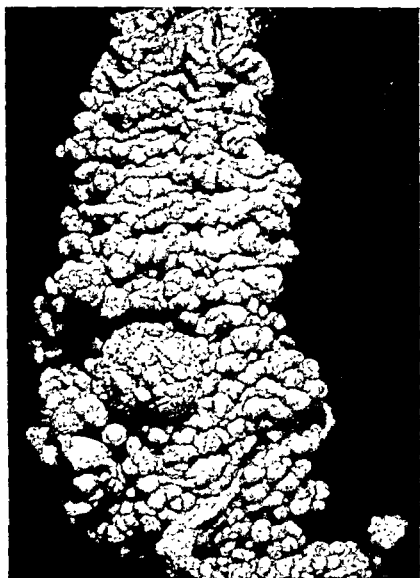


Figure 6. Multiple discrete polyps. One polyp is large and malignant.

Owing to the extreme risk of partial colectomy, it is advisable that this operation be performed, as has been indicated, before fulguration is begun. I prefer this arrangement because I have seen patients succumb following colectomy which had been performed after they had spent endless days undergoing removal of polyps from the rectum and the sigmoid by fulguration. Sometimes many months are required to destroy all the growths in the rectum and sigmoid. Often several hundred of these lesions must be fulgurated and often it is necessary to allow several weeks to elapse between treatments. It is deplorable if, following such a trying experience, the patient comes to colectomy and fails to survive.

After partial colectomy, the rectum and the lower portion of the sigmoid can be cleared of polyps by fulguration and, later, ileosigmoidostomy can



Figure 7. Multiple polyps with diffuse hyperplasia of the colonic wall.

be performed. At the first operation a temporary ileac stoma can be created and the proximal end of the stump of the sigmoid also can be brought out as a stoma in the left lower portion of the abdominal wall. Campbell<sup>2</sup> has described a procedure wherein he brings part of the ileum and part of the sigmoid out through "the lower angle of the incision so that a spur clamp [can] be applied and closure effected later." Thus fulguration of the high polyps can be carried out through the abdominal stoma, as well as through the rectum.

THERE are two morphologic types of multiple polypoid diseases of the colon. In one, the polyps are discrete and the wall of the bowel between them is relatively little involved. In this type, accessible polyps can be fulgurated and, when the bowel has healed, ileosigmoidostomy can be performed. Much has been accomplished by this method and much more may be accomplished. In the other type, polypoid tumors are superimposed on diffusely hyperplastic mucous membrane and there is no possibility of applying fulguration for the polypoid disease because such a procedure would destroy the bowel itself. If fulguration is attempted, there is left only a scarred, contracted remnant, of which the lumen will not be sufficient to permit satisfactory or comfortable passage of feces. Such a strictured tube is poor material for anastomosis with the ileum.

Röntgen therapy apparently has no curative effect on polypoid disease of the colon. Occasionally a physician has felt that beneficial effects have been produced in isolated cases but nothing more. All that is justifiable at present is hope for the future.

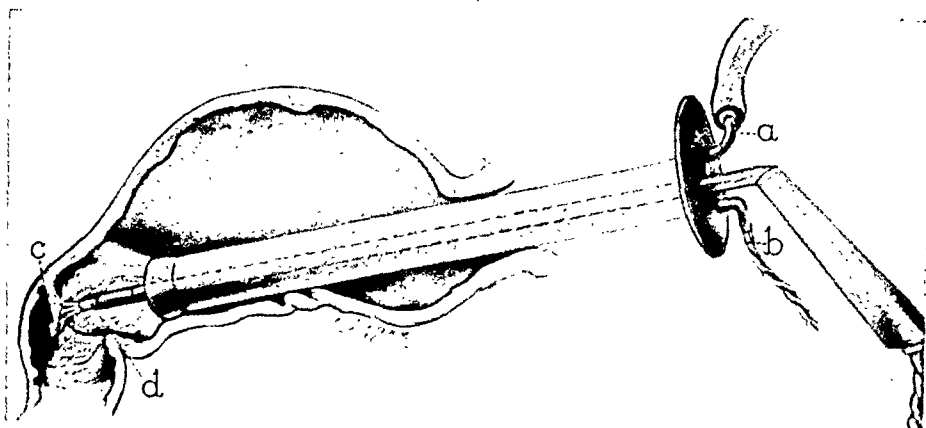


Figure 8. Fulguration of high rectal or sigmoidal polyp; *a*, suction pipe to exhaust smoke; *b*, light carrier; *c*, polyp; *d*, applicator.

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#### TECHNIC OF FULGURATION AND SELECTION OF PATIENTS

For fulguration, a monopolar current is employed. The object of fulguration is complete destruction of the growth by fire. The tip of the electrode can be placed directly against the surface of the tumor. This dries out the tissues. The field to which fulguration is applied must be kept dry. After a field has been dried out in this manner, the tip of the applicator is removed from contact with the lesion and is held at a point approximately 6 or 8 mm. away from the tissues, so that the spark will leap from the electrode to the surface of the growth. An actual flame will develop between the tip of the electrode and the tissues which are being destroyed. The amount of current required in any given case is that which is sufficient to create the tongue of flame between the tip of the electrode and the surface of the tumor. This factor varies not only with patients but with different electrical machines and is best determined by personal experience.

A proctoscope which is suitable for use while performing fulguration includes a built-in suction tube through which smoke and gas can be exhausted from the bowel during the operation. If such suction is not available, gas within the bowel may ignite or even explode. Also, means must be provided for exhausting fecal matter and fluids from the bowel. (Figure 8.)

In most instances, anesthesia is not necessary or

desirable. General anesthesia never should be employed. When the lesion is close to, or in, the anus, or when adequate exposure cannot be obtained, caudocranial or low spinal anesthesia can be used.

It is well to consider here, again, that although fulguration is an effective method great care should be exercised when selecting patients for this type of treatment. Sometimes a lesion may possess characteristics which are favorable for fulguration, yet to employ it may be unwise or even hazardous because of other unfavorable characteristics.

Small, sessile lesions can be fulgurated with little regard to their position in the bowel. Large, sessile polyps require more careful consideration. If such a polyp must be fulgurated, the ideal situation for it is on the posterior wall of that portion of the rectum which is not covered by mesentery. In that location there is little danger of injuring any of the vital structures.

Usually an accessible pedunculated polyp can be fulgurated, regardless of its size or position, provided adequate exposure of the polyp and of the entire pedicle can be obtained. The method of applying fulguration to such a polyp is important. The attack should not be made on the pedicle, with the purpose of causing the free-lying portion of the polyp to slough off quickly, in the hope of shortening the duration of the procedure and of the convalescence. It is better to proceed with caution and to fulgurate the body of the polyp, even if fulguration cannot be completed at one time. In

this manner, the polyp will disintegrate, slough away slowly and probably will not leave an open vessel in the stump of the pedicle. Thus, the danger of hemorrhage is reduced.

Large, disseminated, polypoid lesions and those which are associated with diffuse hyperplasia of the mucous membrane respond poorly to fulguration. Radical surgical treatment is indicated in such cases as these.

#### OBSERVATION AFTER TREATMENT

Regardless of the type of treatment employed, the physician is never justified in releasing the

patient entirely from observation. This is particularly true in those cases wherein fulguration has been employed. In a few cases in which a single adenoma, or several adenomas, of the rectum or lower portion of the sigmoid have been fulgurated, the lesion has recurred. Moreover, I have observed that in 21 per cent of cases in which these lesions have been destroyed, other polyps have been discovered later in tissues adjacent to the site of the destroyed polyps. This confirms the opinion that some individuals have a tendency to grow polyps and, once a polyp has been discovered in a colon, its host should be examined periodically thereafter, whether symptoms are present or absent.

#### REFERENCES

1. BUIE, L. A., and BRUST, J. C. M.: Solitary adenomata of the rectum and lower sigmoid. *Tr. Am. Proct. Soc.*, 1935, p. 57.
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#### WOMEN PHYSICIANS HONORED

THE one-hundredth anniversary of women's entry into the medical profession was observed this year with ceremonies at which 17 contemporary women physicians of the United States, Canada, England, and France were honored for outstanding contributions in their fields. The date marking this century of progress was the anniversary of the graduation of Dr. Elizabeth Blackwell, first woman in the world to receive a medical degree.

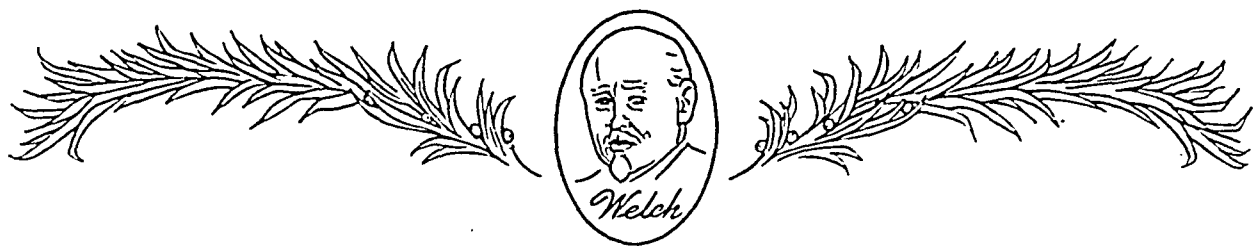
At the New York Infirmary, New York City, Elizabeth Blackwell citations were presented by Mrs. Frank A. Vanderlip, president of the board of trustees, to five New York women. In a ceremony at Hobart and William Smith Colleges, Geneva, New York, Mrs. Eleanor Roosevelt announced the names of 12 chosen for honors from the international field.

Those honored at the New York City observance were Dr. Lauretta Dender, for achievements in child psychology; Dr. Connie Myers Guion, internal medicine; Dr. Anna Hubert, surgery; Dr. May Wilson, pediatric cardiology, and Dr. Ada Chree Reid, cardiology.

Cited at the Geneva ceremony were Dr. Priscilla White, Boston, for work in diabetes; Dr. Florence R. Sabin, Denver, medical research; Dr. Alice Hamilton, Hadlyme, Connecticut, industrial medicine; Dr. Helen V. McLean, Chicago, psychiatry; Dr. Helen B. Taussig, Baltimore, clinical medical research; Dr. Margaret D. Craighill, Topeka, Kansas, military medicine; Dr. Martha May Eliot, Washington, public health; Dr. Gerty T. Cori, Webster Groves, Missouri, biochemistry and pharmacology; Dr. Helen MacMurchy, Toronto, child welfare and public health; Dr. Elise S. L'Esperance, New York, pathology and cancer prevention; Dr. Helen M. M. Mackay, London, pediatrics, and Dr. Therese Bertrand Fontaine, Paris, first French woman *medecin des hopitaux*.

#### UNIVERSITY OF ILLINOIS INSTALLS BETATRON

A 22-MILLION volt betatron for use in cancer research and treatment has been installed at the University of Illinois College of Medicine, Chicago, which will pioneer in the medical use of this instrument. Tests by Professor Donald W. Kerst of the University's physics department prove that the high energy betatron has the medical advantage of concentrating more effect inside the subject than the x-rays now in use for treating deep cancers.



# Emergency Treatment of Apoplexy

GEZA DE TAKATS\*

UNIVERSITY OF ILLINOIS COLLEGE OF MEDICINE, CHICAGO

THE attitude of the medical profession toward strokes has become one of nihilism. This situation has arisen for several reasons: (1) There has not been a systematic effort to separate the three major causes, namely embolism, thrombosis, and hemorrhage, from each other, although this can be done in the majority of instances. (2) The cerebral damage has been thought to be permanent, irreversible, and unalterable. (3) Some patients have made such a good recovery without specific treatment except good nursing care, that any therapeutic attempt has been regarded with suspicion and thought to be superfluous and not responsible for the spontaneous improvement.

It is difficult to estimate the number of strokes occurring day after day in this country but the tremendous amount of residual damage following apoplexy is obvious to everyone. At St. Luke's Hospital, Dr. Gilbert and I studied 121 patients with apoplexy between 1940 and 1946 and found 15 cerebral emboli, 53 cerebral thromboses, and 53 cerebral hemorrhages. Table 1 indicates our diagnostic criteria based on this material.

## CASE REPORT<sup>1</sup>

A 37-year-old white woman was admitted to the Cleveland Clinic Hospital on September 19, 1947, in a comatose

\*Department of Surgery, University of Illinois College of Medicine and St. Luke's Hospital, Chicago.

Presented November 12, 1948, before the meeting of the Interstate Postgraduate Medical Association of North America, Cleveland, Ohio.

<sup>1</sup>This patient was presented to the Assembly through the courtesy of the local committee. She belongs to the group of cases in whom sympathetic block need not be done.

state. According to the history obtained from the mother, she had been treated for high blood pressure for a year previously, but she never complained of headaches or visual disturbances. She was found unconscious at work on September 17, 1947, and apparently had vomited.

Lumbar puncture at a local hospital on September 18 revealed many red and white blood cells. There was a paralysis of the right arm and leg. Urinalysis revealed a 4+ albuminuria; blood pressure was 220/110, pulse 92, respiration 24. The pupils were small, round, and equal, and reacted to light. Fundus examination revealed 3+ constriction and 2+ sclerosis of retinal vessels. A systolic precordial murmur was present. There was right facial weakness, paralysis of the right arm and leg, right hyperreflexia, and right Babinski. Lumbar puncture: initial pressure 220 mm. of water; 12 cc. pink cerebrospinal fluid removed; final pressure 110 mm. of water. The patient was conscious by September 20, but when she was discharged on September 24, she still had complete aphasia, right hemianopsia, and right hemiplegia.

She was readmitted approximately three weeks later because of increasing helplessness, and increased difficulty in eating; she kept her head turned to the left. All the physical findings present on the previous admission were still noted, in addition to bilateral papilledema with retinal hemorrhages and exudates, nuchal rigidity, and crepitant râles at the left base. Lumbar puncture again revealed xanthochromic fluid and a high pressure. The initial pressure at the previous admission was 220; at this time, it was 190.

An encephalogram made at this time was not diagnostic; she had right stellate block on October 11, 1947, and it was not followed by any improvement.

I would like to point out that she still shows considerable spasticity on the right hemiplegic extremity, so much so that she requires a brace to enable her to walk. She is regaining her speech gradually. Her improvement has been rather slow, and it is my opinion that she had a cerebral hemorrhage.

*Cerebral embolism* was diagnosed in patients with sudden cerebrovascular insult, who had an

obvious cardiac lesion for the source of the embolus, or who had had previous embolic episodes to the brain or elsewhere in the body, whose spinal fluid was clear and showed no elevation of pressure. The ages in this series of 15 patients varied from 18 to 60, the average being 53 years. The blood pressure varied from 110/80 to 210/100. Seven patients belonged to the hypertensive arteriosclerotic group and 8 to the rheumatic group. Of the 6 patients with cerebral emboli based on rheumatic heart disease only 1 died, a 40-year-old male, with heart failure; of the remaining 9 patients having cerebral emboli as postcoronary complications and hypertensive cardiovascular disease, 5 died. While this is of no statistical significance in such a small series, it is obvious that the prognosis is better in the rheumatic group.

*Cerebral thrombosis*, or more appropriately cerebral softening, shows areas of malacia or necrosis in the brain as a result of stenosis or hyalinization of arterioles, whereas an arterial thrombosis is seldom encountered. In this group of 53 patients, 9 died in the attack. A fall in blood pressure and the anoxia of the inevitable bronchopneumonia of the unconscious patient seemed to transform the silent or latent cerebral softening to the clinical entity of "thrombosis" or even to death.

To make a diagnosis of encephalomalacia—not embolus and not hemorrhage—we postulate a patient afflicted with cardiovascular-renal disease, moderate hypertension, and an onset which is frequently gradual. While loss of consciousness was present in approximately one-half of the cases, it did not persist for many days. Increased intracranial pressure was not observed, the spinal fluid was clear, and if the pressure of the spinal fluid was elevated, it was part of the hypertensive encephalopathy. This group is really diagnosed by exclusion of embolism and hemorrhage from the causes of stroke.

The average age of this group was 60.8 years. The average blood pressure need not be stressed since the study of the charts revealed that readings were determined at various stages of the attack and therefore are meaningless. It is an interesting fact, however, that postoperative or postcoronary hemiplegias were noted to be accompanied by a prolonged and rapid fall in blood pressure. This was also true in some strokes occurring during sleep. The onset was sudden in 25 and gradual in 28 of the patients.

If the patient did not die of the attack or of



GEZA DE TAKATS

complicating bronchopneumonia, recovery was slow, improvement being noted in 20 and no improvement in another 20 patients. Fatalities were recorded in 13 patients (24.5 per cent) all of them dying between the fifth and twenty-eighth day after the accident.

*Cerebral hemorrhage* was diagnosed in 53 patients; of these, 41 died within a few hours or days, a mortality of 77 per cent. The average age of this group was 58.9 years, ranging from 41 to 80 years. The average blood pressure was 213/120 with extremes of 300/150 to 120/70. Again it should be pointed out that the vascular insult itself may modify the blood pressure readings but the tendency for the highest pressures among the three varieties of apoplexy is well defined in cases of hemorrhage. Only a few patients showed a gradual onset, but even in these a deepening coma was observed. A sudden, fulminating onset was observed in 49, or 92 per cent, of the 53 patients. The spinal fluid was clear in 30 per cent. Over two-thirds of the patients had bloody spinal fluid and three-fourths had bloody spinal fluid or increased spinal fluid pressure (over 160 mm. of

TABLE 1  
SUMMARY OF FINDINGS IN 121 CASES OF APOPLEXY

	DIAGNOSIS		
	EMBOLUS	HEMORRHAGE	THROMBOSIS (Cerebral softening)
Number of patients	15	53	53
Average blood pressure	143/85	213/120	166/97
Sudden onset, per cent	100	92	47
Normal spinal fluid, per cent	100	30	90*
Improvement noted, per cent	40	9	38
Mortality, per cent	40	77	24

\*No blood, but increased pressure due to hypertension.

water). In massive hemorrhage the outlook was poor, only 9 per cent improving; 14 per cent were unimproved, and 77 per cent died (Table 1).

Attention should be called to the fact that in nonfatal hemorrhage the spinal fluid may be free of blood in one-third of the cases, and the pressure is not elevated in one-fourth of the cases. On the other hand in patients with cerebral softening, the spinal fluid pressure was increased in 10 per cent of the cases, due to hypertension. A second spinal tap done four to five days after the original insult may reveal red cells, frank blood, or increased pressure in patients with a slow leak of their intracerebral hemorrhage in the ventricular system or to the surface of the brain.

COURSE OF EVENTS IN THE BRAIN

Our knowledge regarding the vascular phenomena in the cranial cavity following a stroke is based on animal experiments studied through a transparent window in the skull, on occasional operative findings in man, and on a huge mass of postmortem observations. The most clearcut evidence of a vasomotor storm is found after an experimental embolus, when the vessels of the pia are seen to contract around the embolus. Interestingly this does not occur in air-embolism, but only in thrombo-embolism. Small cerebral emboli are often seen in fibrillators suffering from rheumatic heart disease or in patients with intraventricular thrombi following myocardial infarction.

Patients with so-called cerebral thrombosis really seem to have a gradual narrowing and sclerosis of their cerebral vessels; the ischemic areas of the brain undergo softening. The areas of malacia get

a slight blood supply through the main channel and some collateral channels, which exist in the brain just as elsewhere. When blood pressure falls during sleep, in shock after a coronary occlusion, after a pulmonary embolus, or during a surgical operation, the partial anoxia becomes total, and signs and symptoms of a cerebrovascular accident occur. In this softened area hemorrhage may occur through diapedesis.

In hemorrhage, rupture of a normal vessel can hardly occur with blood pressures of 300 millimeters of mercury. It is necessary that the wall be weakened by hyalinization, aneurysm formation, or such increase in fragility that sudden fluctuations of pressure produce petechiae or coalescent hemorrhages. The Rumpel-Leede test for capillary fragility is surprisingly often positive in late stages of hypertension, in avitaminosis, in allergies, in chronic alcoholism, and many other states.

The diabetic retinopathy with hemorrhages seems to be favorably influenced by rutin (the permeability vitamin) and hence its administration to patients suffering from cerebral hemorrhage may have preventive value. Since 20 per cent of 1,200 hypertensives showed increased capillary fragility, at least this group should get rutin for prophylaxis of cerebral hemorrhage.

THERE may be, of course, other reasons for acute cerebral anoxia, such as a long-lasting nitrous oxide anesthesia with insufficient oxygen supply, or a prolonged operation on an exsanguinated individual, on a blue baby, or hypertensives used to higher pressure. With the advent of the long-lasting operations, with or without profound loss of blood, the involvement in cerebral circulation must be considered.

From the standpoint of localization it should be remembered that the majority of vascular accidents occur in the region of the internal capsule, from where the motor, the sensory, and visual phenomena originate. The lesion in the basal ganglia affects the extrapyramidal system and thus is responsible for the rigidity of the hemiplegic limb. The cortex itself may only be involved in collateral edema and produce flaccidity. Flaccidity followed by spasticity means the disappearance of cerebral shock and is the expression of the actual organic damage. We shall see that in our therapeutic attempts this phenomenon is of significance.

The internal capsule is supplied by the perfor-

ating branches of the middle cerebral artery, which have been compared to the bristles of a beard. These are the vessels most frequently involved in a cerebrovascular accident and, depending on the extent of hemorrhage or softening, there will be contralateral hemiplegia, sensory changes, facial changes, and sometimes ipsilateral involvement. It is well for all of us treating cerebral vascular lesions to have at least a rough conception of the area involved.

#### OUTLINE OF TREATMENT

THE earlier treatment is begun the better are the chances for hastening restitution. A brief cardiovascular and neurologic examination is done and the history is obtained from the relatives. The patient is immediately placed in an oxygen tent; this not only helps his anoxia but may indirectly aid his aortic depressor and carotid sinus reflexes. If signs of increased cerebrospinal pressure are dominant, a spinal tap is done and spinal pressure is measured. Frank blood indicates cerebral or subarachnoid hemorrhage. Marked hypertension with signs of increased venous pressure in the neck requires venesection, which is done slowly, not more than 300 cc. of blood being removed at one time. Unless coma is deepening and a terminal condition is obvious, and if massive hemorrhage can be reasonably excluded, a sympathetic block is performed with the patient in the reclining or semi-sitting position in his bed.

For diagnostic and therapeutic purposes we have generally preferred the anterior approach to the sympathetic chain. The method used is as follows: The patient's neck is slightly hyperextended by placing a small pillow under the shoulder blade of the same side; the head is turned away from the site of injection. With an applicator dipped in iodine, a line is drawn from the mastoid process to the clavicle, through the tips of the palpable transverse processes. A dermal wheal with 1 per cent procaine (without epinephrine) is placed over the tip of the seventh transverse process. A 4-inch (9 cm.) 22-gauge needle is inserted through this wheal. It must shortly make contact with the tip of the transverse process, which is quite superficial. Then the needle slides along the superior border of the transverse process until it contacts the body of the sixth cervical vertebra. Aspiration is now made for air bubbles, for blood, and for spinal fluid; if this is negative, 10 cc. of 1 per cent

TABLE 2  
APOPLEXIES—CRITERIA OF IMPROVEMENT FOLLOWING  
STELLATE BLOCK

	NUMBER OF PATIENTS
Regained consciousness	6
Regained speech	5
Improved speech	12
Motor improvement	8
Abolished flaccid paralysis	10
No improvement	9

procaine solution are injected, aspirating repeatedly during this procedure.

A successful block must be followed within ten to fifteen minutes by a Horner's syndrome, by a dilatation of the conjunctival vessels, by a dryness and increased warmth of the face and ear lobes on the injected side, and by a rise in temperature and dryness of the corresponding upper extremity. Unless a Horner's syndrome develops, the injection must be regarded as faulty and should be repeated.

This cervical injection is done on the side of the lesion; this is not immediately obvious when the patient is seen quite early, since he may be quadriplegic and have a flaccid paralysis, though either a facial involvement or a beginning sensory change may point to the side of involvement. Dilatation of the pupil is more frequent on the contralateral side. Loss of pupillary reaction is again more frequent in hemorrhage.

If improvement is to follow cervical sympathetic block, it should be noticed within the next ten minutes. The improvement may then continue and should a relapse occur, the patient must be reinjected. We have not given these injections more often than once every twenty-four hours, but they might be given even eight to twelve hours apart if improvement is followed by signs of deterioration (Table 2).

A total of 105 injections have been given to 50 patients. More than half of these patients received only one injection, since in our early experience we were not sufficiently aware of the importance of reinjecting the patient if the first injection seemed useful. Today it is customary to inject the cervical sympathetics daily until no further improvement is noted. It also seems that bilateral sympathetic block is more effective, at least in the animal experiment, but no simultaneous injections have been made in this series.

TABLE 3

RESULTS CORRELATED WITH THE TIME ELAPSED BETWEEN  
ONSET AND STELLATE BLOCK

	NUMBER OF PATIENTS	IMPROVEMENT
First hour	5	4
2 to 6 hours	8	6
6 to 12 hours	7	5
12 to 24 hours	5	3
24 to 48 hours	20	3
More than 48 hours	5	0

THE TIME FACTOR

Gradually we have come to recognize the fact that, at least in the big cities, the patient must actually be in the hospital for some other reason when the cerebrovascular accident occurs so that the injection can be given immediately. Of the 5 patients injected within the first hour, 1 was a visitor, 1 a blue baby who developed a hemiplegia during the exposure of the tetralogy of Fallot, 1 was in the hospital for a coronary occlusion, and 2 had had previous peripheral emboli and were fibrillating (Table 3).

DISCUSSION

IN SPITE of the theoretical considerations which made it seem unlikely that the temporary elimination of vasomotor tonus of the cerebral vessels would effectively influence the deranged cerebral circulation following apoplexy, our clinical observations leave no doubt that in properly selected cases injected at the earliest possible moment, an acceleration of the phase of restitution may be expected. By this we mean that in all cerebrovascular accidents, surrounding the ischemic or hemorrhagic infarct, there exists a zone of stasis, vasoparalysis, and exudation of plasma. This has been seen in the experimental animal through a window in the skull by Villaret and Cachera. They also demonstrated the development of a collateral network around the infarcted areas and the existence of segmental spasms and dilatations in the non-obstructed vessels. They showed that these functional changes must be activated by an irritative sensory lesion of the obstructed vessels, since air-embolism, while producing complete vascular block, never was accompanied by such phenomena. Their observations, however, relate to the vessels of the pia which are known to have more vasomotor control than those of intracerebral vessels.

A second observation, which indicates the wide-

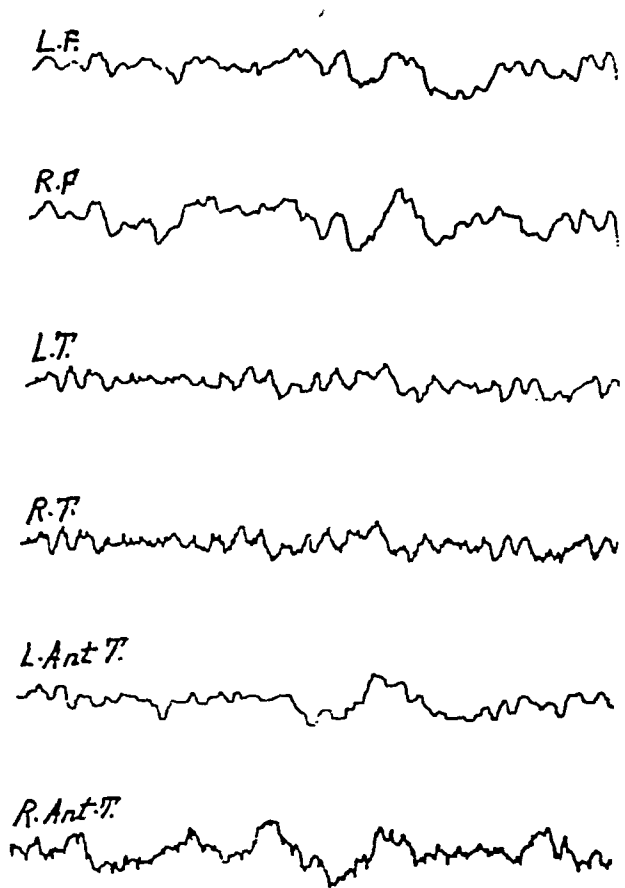


Figure 1. Electro-encephalogram report, St. Luke's Hospital, May 27, 1948. Male, 76 years of age; clinical diagnosis, left hemiplegia. Record shows irregular slow wave focus of 1½ to 2/seconds frequency in the right temporal, right anterior temporal, and bifrontal leads. Background activity about 7/seconds. Impression: Slow wave focus centering in the right frontotemporal area.

spread cerebral damage a great distance from the original lesion, can be found in the histologic studies of Evans and Scheinker who found diffuse cerebral atrophy accompanying focal injuries in head trauma. They reported that the white matter stands the collateral edema and stasis much more poorly and that the hypoxia here is followed by diffuse gliosis. While recently there has been a tendency to minimize the importance of cerebral swelling in concussions, the accurate measurement of White, Brooks, Goldthwaite, and Adams showed that edema and congestion are present, due to extravasation of fluid through permeable anoxic capillary membranes.

The question then arises, can sympathetic block relieve such stasis by (1) releasing the arteriolar spasm proximal to it; (2) improving venous drainage and thereby also decreasing intraventricular and intraspinal pressure, or (3) by so affecting the extracerebral portion of the carotids that more blood may be brought to the brain. Such studies are now under way.

Additional evidence that sympathetic block radically changes the function of the brain following a vascular accident is provided by electro-encephalograms taken before and fifteen minutes after a successful block in a case of cerebral thrombosis (Figures 1 and 2). It will be noted that the slow foci in the left frontal, right frontal, right temporal, and right anterior temporal leads have all been accelerated and have taken on a normal pattern.

#### TREATMENT

ON THE basis of our conception, the following therapeutic measures seem indicated in acute cerebrovascular accidents.

In patients with cerebral embolism, an oxygen tent, medication for slowing of rapid fibrillation, stellate block, and anticoagulants are ordered. Dicumarol may be kept up for weeks and months according to a schedule we have discussed elsewhere.

In patients with cerebral thrombosis, an oxygen tent, venesection in case of hypertension, stellate block, and release of increased spinal fluid pressure are indicated.

In patients with cerebral hemorrhage, an oxygen tent, slow spinal drainage, and neurosurgical consultation for possible evacuation of clots may be considered. No sympathetic block need be done.

In all three varieties of apoplexy, hypertonic sucrose or concentrated albumin with 5 to 7½ gr. (0.24-0.5 gm.) of aminophylline given intravenously should improve the cerebral edema. There is some evidence that aminophylline lowers spinal fluid pressure and its use seemed to us more rational than the extreme dehydration advocated in patients with cerebrovascular accidents or with head trauma.

#### ADDITIONAL MEASURES

*Pulmonary ventilation*—An embarrassed cerebral circulation is greatly handicapped if the oxygen

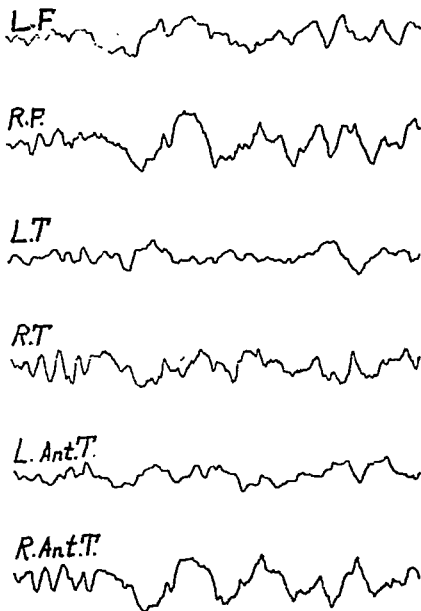


Figure 2. Electro-encephalogram report, St. Luke's Hospital, May 27, 1948. Male, 76 years of age. All slow activity decreased. Focus reduced and entire record looks more normal. Impression: greatly improved. (Tracing obtained immediately after stellate nerve block on right side of neck. Horner's syndrome present in right eye.)

exchange in the lungs is diminished. It is not enough, however, to place the unconscious or slightly cyanotic patient in an oxygen tent and leave him in the half-sitting position. Mucus and bronchial secretion collect in astonishing quantities in the tracheobronchial tree of the apoplectic patient, just as in head trauma. It is likely that, just as in pulmonary embolism and in reflex pulmonary atelectasis following chest trauma, this wet lung is the result of vagal stimulation which here is of central origin.

Since the majority of patients who survive the first forty-eight hours of the apoplectic insult die

of pneumonia, postural drainage of the tracheo-bronchial tree is an important and much-neglected measure in the unconscious patient. The patient is placed on his side, rather than on his abdomen, and the foot of the bed is slightly elevated. Mucus may be aspirated from the mouth and pharynx through a No. 14 French catheter. A metal airway may be inserted if necessary. Aminophylline and atropine may be used if secretion is excessive. It is astonishing how good postural drainage and some pharmacologic inhibition of bronchial obstruction and secretion may clear up neurologic signs due to anoxia and prevent the greatest single cause of mortality.

**Nutrition**—If after twenty-four hours the patient is still unconscious, parenterally administered fluids are substituted by hourly feeding through a Levine tube, keeping the patient's protein and vitamin requirements in mind. Dehydration, as practiced so extensively at one time in cases of head injuries, need not be carried out, and a fluid intake of 2,000 to 3,000 cc. of liquids should be maintained. Twenty-five per cent albumin intravenously gives excellent nourishment and serves a more useful measure against the wet brain than glucose or sucrose injections.

**Urinary drainage**—Overdistention of the bladder in the stuporous patient should not be allowed to persist; both retention and incontinence are encountered and these should be treated according to present-day urologic principles. The wet soiled linen greatly contributes to the occurrence of decubitus ulcers.

**Sedation**—Stuporous or unconscious patients require no sedation. Restless patients may have phenobarbital 0.6 to 0.2 gm. (1 to 3 gr.), bromides 1.2 to 2.4 gm. (20 to 40 gr.), chloral hydrate 1.2 to 2.0 gm. (20 to 30 gr.), or paraldehyde 4 to 12 cc. (1 to 3 drams) per rectum. For patients with severe restlessness or delirium, intravenous pentothal or amytal may be needed but narcotics are to be

avoided for several reasons. Their *miotic effect* prevents the development of localizing eye signs, they depress the activity of the respiratory and cardiovascular mechanisms, they increase intracranial tension, they may exert undesirable side effects on the gastrointestinal tract, and finally as sedatives they do not calm the patient any more than the above mentioned less noxious agents. Generally speaking the apoplectic patient should have the benefit of treatment developed by neurosurgeons in cases of head trauma. These principles have not been consistently applied to the patient suffering from strokes.

**Surgical exploration in apoplexy**—This method of attack is still in its infancy. As Aring pointed out, every massive cerebral hemorrhage above a certain size is fatal. Our mortality in the present series is 77 per cent and here is a neurosurgical problem which needs to be attacked before the blood reaches the intraventricular system. Ventriculograms and arteriograms may be helpful in localizing the hemorrhage. The indications and results of such clot evacuations in cases of spontaneous intracerebral hemorrhage are yet unknown.

#### SUMMARY

Attention has been called to the importance of a differentiation between cerebral embolism, thrombosis (or softening), and hemorrhage. The importance of collateral stasis, vasoparalysis, and edema, accompanying the cerebrovascular accident has been stressed. In 50 patients the cervical sympathetic trunk was blocked with procaine on the side of the apoplexy. Good response was obtained in 41 of these. Regaining of consciousness, of speech, motor improvement, and conversion of flaccid into spastic paralysis were also observed. Other methods of combating cerebral edema and stasis may be added. A less passive attitude in the treatment of apoplexy is suggested.

#### SALMON MEMORIAL LECTURER NAMED

Dr. Stanley Cobb has been named the Salmon Memorial Lecturer for 1949 by the Salmon Committee on Psychiatry and Mental Hygiene, appointed by the New York Academy of Medicine. Dr. Cobb is Bullard professor of neuropathology at Harvard Medical School, a post he has held since 1926. He has been psychiatrist in chief of the Massachusetts General Hospital for the past fifteen years. Every year since 1932 the Salmon Committee has chosen as lecturer an outstanding specialist in the field.



# Public Understanding of the Vitamins

ROBERT S. GOODHART\*

NEW YORK

THERE is a great deal that we do not know about the vitamins, their methods of action within the body, and the metabolic dysfunctions associated with their absence or deficiency. There is ample information, however, to permit physicians and the general public to evaluate intelligently the probable importance of the vitamins in their daily diets and in therapeutics.

Much of the confusion that exists in the minds of many people appears to arise from the failure to comprehend the basic nature of the vitamins as essential nutrients which do not themselves produce energy or body tissues but without which neither energy nor tissue can be manufactured by the living body. Those vitamins for which specific biochemical functions have been found, e.g., thiamine, riboflavin and niacin, have been shown to act within the body as components of enzyme systems essential for the metabolism of fats, carbohydrates, and proteins, as components of mechanisms necessary for the transport of fat and as sources of labile methyl groups (choline), or as essentials for the formation of other specific biologic substances (vitamin K and prothrombin, vitamin A, and rhodopsin). General understand-

ing of the sparking and mediating roles of the vitamins in metabolism would do much toward resolving popular misconceptions and the frequently senseless arguments about the relative merits of natural foods and the synthetic vitamins.

The vitamins are useless without substrata upon which to act or media in which to operate, without carbohydrates, protein, fat, water, oxygen, and certain minerals. The proper foods are essential for health and the vitamins, either natural or synthetic, are essential for the efficient and optimal utilization of ingested foodstuffs by the body.

It is true that natural foods contain, in addition to other essentials, a number of vitamins and vitamin-like substances which are not available in the synthetic form. It is also true that most of the foods eaten by the average American are not natural foods in the sense that they contain all of the nutrients of the freshly harvested, mature products. Most of the foods which we eat have suffered losses of important dietary essentials through premature harvesting and through storage, processing, kitchen preparation, cooking, and serving. Thus, although it is important that we choose our foods wisely, according to the approximate content of essential nutrients, it is not always

\*Scientific Director, The National Vitamin Foundation, Inc., New York.

of pneumonia, postural drainage of the tracheo-bronchial tree is an important and much-neglected measure in the unconscious patient. The patient is placed on his side, rather than on his abdomen, and the foot of the bed is slightly elevated. Mucus may be aspirated from the mouth and pharynx through a No. 14 French catheter. A metal airway may be inserted if necessary. Aminophylline and atropine may be used if secretion is excessive. It is astonishing how good postural drainage and some pharmacologic inhibition of bronchial obstruction and secretion may clear up neurologic signs due to anoxia and prevent the greatest single cause of mortality.

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Attention has been called to the importance of a differentiation between cerebral embolism, thrombosis (or softening), and hemorrhage. The importance of collateral stasis, vasoparalysis, and edema, accompanying the cerebrovascular accident has been stressed. In 50 patients the cervical sympathetic trunk was blocked with procaine on the side of the apoplexy. Good response was obtained in 41 of these. Regaining of consciousness, of speech, motor improvement, and conversion of flaccid into spastic paralysis were also observed. Other methods of combating cerebral edema and stasis may be added. A less passive attitude in the treatment of apoplexy is suggested.

#### SALMON MEMORIAL LECTURER NAMED

DR. Stanley Cobb has been named the Salmon Memorial Lecturer for 1949 by the Salmon Committee on Psychiatry and Mental Hygiene, appointed by the New York Academy of Medicine. Dr. Cobb is Bullard professor of neuropathology at Harvard Medical School, a post he has held since 1926. He has been psychiatrist in chief of the Massachusetts General Hospital for the past fifteen years. Every year since 1932 the Salmon Committee has chosen as lecturer an outstanding specialist in the field.

the great majority of the people in this country the possibility of obtaining an adequate diet. The Food and Nutrition Board of The National Research Council<sup>1</sup> examined all of the available experimental data and prepared a table of Recommended Dietary Allowances (Table 1) designed to meet "the immediate needs of normal persons with relatively low efficiency." It is recommended that physicians use this guide in estimating the adequacy of the diets of "healthy" persons, bearing in mind that some individuals will require more than the recommended amounts of certain nutrients and that the Recommended Dietary Allowances refer to nutrients actually ingested and not as present in foods when purchased.

ALL DIETARY surveys in this country indicate a marked prevalence of dietary inadequacies as judged by the Recommended Dietary Allowances.<sup>2</sup> For the reasons indicated above, this is not synonymous with the prevalence of nutritional deficiencies.

The anatomic and biochemical criteria presently advocated and used in nutrition surveys for the determination of the prevalence of mild and chronic vitamin deficiency states are unsatisfactory. Very few of the anatomic lesions have been proved to be pathognomonic of specific vitamin deficiencies and in the production of some of them other traumatic factors may be of major importance. Serious functional disturbance may precede the development of objective anatomic signs by a considerable period of time and may be present when casual determinations of blood and urine vitamin content show levels within the normal range. Nevertheless these tests are useful when applied to large groups of the population, as indications of the probable prevalence of certain vitamin deficiencies. The results of chemical studies and of the medical assessment of nutritional status are in agreement with those of dietary surveys in suggesting a high incidence of mild and chronic vitamin deficiency in the population of the United States.<sup>2</sup>

The order of frequency of the common

vitamin deficiencies appears to be about as follows: vitamin A, riboflavin, niacin, ascorbic acid, vitamin D, and thiamine. The order of frequency varies, of course, in different sections of the country, in different economic and social groups, and in different diseases. It must be remembered, also, that a deficiency of a single vitamin practically never occurs in man. Multiple deficiency is the rule and multivitamin therapy is the treatment of choice.

It cannot be overemphasized that prevention of the development of nutritional deficiencies is much more efficient, in terms of conserving the health and of prolonging the active, productive life of the individual, than periodic attempts to correct nutritional deficiency states. Therapeutic amounts of the vitamins are five to ten times greater than optimum maintenance amounts and therapy generally must be continued over months and even years. Some of the anatomic lesions of vitamin deficiency are not subject to correction. If the age of onset of senescence is influenced at all by nutritional status, the initial effect occurs early in life and proper dietary habits should be inculcated early in childhood.

The water-soluble vitamins are not well stored by the body and in order to insure good nutrition the daily intake of them should be adequate. In all disease states where the requirement is increased, or the absorption or utilization is decreased, the vitamin intake should be increased. Periodic deficiencies may be the cause of chronic abnormalities.

It is theoretically possible to prevent the development of any degree of vitamin deficiency in a well individual by dietary means alone. It seems to me that this would be extremely unlikely in the presence of disease and I doubt that any individual goes through life without at some time or other developing a vitamin deficiency, the scars of which he carries to his grave.

It is senseless to attempt therapy of vitamin deficiency states with "natural" foodstuffs alone, when the synthetic vitamins and vitamin concentrates are available. It is not fair to the patient to deny him therapeutic amounts of these

substances when he presents signs and symptoms known to be associated with vitamin deficiency states. The physician has a responsibility to keep himself acquainted with the positive and suggestive signs and symptoms of mild and chronic vitamin deficiency states. Nutrition is not merely a branch of medicine, it is a foundation stone for health.

#### SUMMARY

The vitamins are neither dangerous drugs nor panaceas. They are accessory food substances necessary for the metabolism of other foodstuffs and the discharge of important body functions. They are of no value to the body in the absence of a substratum upon which to act and the synthetic vitamins cannot be substituted for customary foods.

Most farm products eaten by civilized man have undergone changes since harvesting and should not be considered to be "natural." Among other nutrients, certain vitamin losses occur in harvested foods by the time they are eaten. To compensate for these losses by the vitamin fortification of important staple foods or by the use of polyvitamin preparations constitutes a sensible and desirable procedure in preventive medicine.

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THE FIRST MEDICAL EDITOR

(From: "The Medical Pickwick," a monthly literary magazine which suspended publication about 1920.)

## Antipernicious Anemia Substances

ROBERT W. HEINLE\*

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LIVER extract or folic acid or both are effective in only a definitely limited number of conditions, namely, certain of the macrocytic anemias which are associated with megaloblastic hyperplasia in the marrow, by which we mean that the marrow contains very immature cells of the red cell series. This group of diseases includes pernicious anemia, which is by far the most common type of this anemia seen in this part of the country. It also includes sprue, both the tropical and nontropical varieties, of which, of course, we see very little here; certain macrocytic anemias of pregnancy which are not common in my own experience; certain nutritional deficiency anemias which produce anemia similar in appearance to that of pernicious anemia and which Dr. Tom Spies describes, particularly in people living in the South; and, finally the macrocytic anemia of infancy, usually seen in children under 2 years of age, and particularly in those children who have been on diets containing milk substitutes.

It is important to note at least theoretically that all these anemias which do respond either to liver extract or folic acid are associated with megaloblastic hyperplasia in the marrow. It does not mean that one necessarily has to demonstrate this in each of his patients, but it does mean that one must know that type of disorder is present in the marrow, because in the absence of the megaloblastic hyperplasia in the marrow these therapeutic materials are not effective.

### DIAGNOSIS OF PERNICIOUS ANEMIA

So far as the diagnosis of pernicious anemia is

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concerned (and I should like to devote most of my discussion to pernicious anemia because it is the most common type of these anemias), it is, of course, necessary to do certain laboratory procedures in addition to a history and physical examination. These, however, are not so complicated that they cannot be done by any physician who has facilities for performing a red blood count and hemoglobin determination. We find a reduction in the red blood cell count and hemoglobin, in addition to which there is almost uniformly, in pernicious anemia in relapse, a reduction in the white blood count and the number of blood platelets.

One thing that is useful in making a diagnosis of pernicious anemia is demonstrated in Figure 1, in which we see the various blood indices. The mean corpuscular volume expresses the volume of the erythrocyte, the mean corpuscular hemoglobin gives the weight of hemoglobin in the red cell, and the mean corpuscular hemoglobin concentration shows the percentage of the cell which is hemoglobin. It is not necessary to figure out all of these for the clinical diagnosis of pernicious anemia.

I should like to call your attention particularly to the color index. You are all familiar with this, I am sure. It is calculated by dividing the *percentage* of hemoglobin by the *percentage* of the red blood count. In order to express a value in *per cent*, something has to be considered a hundred *per cent*, which makes this a little bad, but for ordinary purposes in figuring the color index we assume a red blood count of 5,000,000 per cu. mm. to be 100 *per cent* of normal and a hemoglobin of 15 or 15.6 gm. per 100 ml. to be 100 *per cent* of normal. If one then had a patient with a red blood count of 5,000,000 and a hemoglobin of 15.6 gm., the color index would be  $\frac{15.6}{15}$  or 1. So normally the color index is unity.



ROBERT W. HEINLE

In pernicious anemia the color index is elevated, which means that each of the red blood cells is carrying a greater than normal amount of hemoglobin. For example, one might find a pernicious anemia patient with a red blood count of, let us say 2,000,000, which is 40 per cent of normal, but instead of the hemoglobin being 40 per cent it might be 60 per cent of normal, so that the color index would become  $\frac{60}{40}$ , a color index of 1.5, or greater than unity.

We can tell by looking at the red blood cells on the smear that something is changed. Some normal red blood cells (Figure 2) may be compared with red blood cells of pernicious anemia (Figure 3). The normal cells are more or less uniform in size and shape and in their staining reaction. The white cell is a lymphocyte.

When pernicious anemia is present, the cells tend to be larger. There are many large cells, as can be seen in Figure 3. You can see, however, that there are also small cells, so that there is considerable variation in size of the red blood cells. Then you observe the odd-shaped cells such as a sickle cell, a tear-drop shape, and others. In pernicious anemia there is an increase in size of the red blood cells

and a variation in the size and shape of the cells.

In addition to these things, it is necessary, in order really to establish a diagnosis of pernicious anemia, to do a little more laboratory work. One of the things that should certainly be done is a gastric analysis. Patients with pernicious anemia are lacking in gastric hydrochloric acid. If one finds hydrochloric acid in the stomach of a patient, one can be sure that pernicious anemia is not present. The converse is not necessarily true. That is to say, some normal people do not have free hydrochloric acid in the stomach, but no patient with pernicious anemia has gastric hydrochloric acid. In order to be sure of this it is necessary to give the patient histamine.

Histamine is one of the most potent stimulators of gastric secretion of which we know. We give the patient 0.5 mg. or 1.0 mg. of histamine subcutaneously and see if there is any acid present in the stomach twenty or forty minutes after such administration. In pernicious anemia there is no free hydrochloric acid after histamine is administered. It is very important that this test be performed if you decide you are going to make a diagnosis of pernicious anemia, because if there is hydrochloric acid in the stomach, that patient does not have pernicious anemia and it means that you do not have to treat the patient the rest of his or her life with liver extract. Once you make a diagnosis of pernicious anemia you are committed to treat this patient regularly the rest of his life. It is a shame to do that if true pernicious anemia is not really present.

For clinical purposes I think that is enough laboratory work. In other words, you demonstrate that an anemia is present; you demonstrate that the red cells are large by noting what the color index is and by looking at the red blood cells on the smear; and you demonstrate that the patient has no acid. Having done that, you are certainly justified in making a working diagnosis of pernicious anemia and seeing what happens with treatment.

Figure 4 shows what does happen when a patient with pernicious anemia is treated with an active material, which in this case was folic acid. When a patient is treated with any active material, either liver extract or folic acid, one of the first changes is a rise in reticulocytes. The chart shows daily reticulocyte counts recorded. It is not absolutely necessary to do daily reticulocyte counts, because while it is true that the reticulocytes go up

$\frac{\text{Vol. (cc. per 1,000 cc.)}}{\text{R.B.C. (in millions)}} = \text{corpuscular volume in } \mu$	$\frac{\text{Vol. per cent}}{\text{R.B.C., per cent}} = \text{volume index}$
$\frac{\text{Hb. (gm. per 1,000 cc.)}}{\text{R.B.C. (in millions)}} = \text{corpuscular hemoglobin in 10-12 gm.}$	$\frac{\text{Hb., per cent}}{\text{R.B.C., per cent}} = \text{color index}$
$\frac{\text{Hb. (gm. per 100 cc.)}}{\text{Vol. (cc. per 100 cc.)}} = \text{proportion of hb. in cell;}$	$\frac{\text{Hb., per cent}}{\text{Vol., per cent}} = \text{saturation index}$

Figure 1. Blood indices useful in making diagnosis of pernicious anemia as explained on page 197.

within five to ten days to a very high peak, if you want to wait just a few more days you will find that the red blood count eventually goes up. In this case there was a definite increase in the red blood count at the end of twenty-five days. The hemoglobin likewise goes up. The white cells, which were a little low here, go up and finally stay up. So while it is nice to have daily reticulocyte counts, it is not absolutely necessary.

One thing I do want to point out to you very definitely (and I would like to emphasize this strongly) is that if a patient has pernicious anemia, the red blood count will be approximately normal within sixty days after the start of adequate treatment. That is important, because if the red blood count has shown very little change by the end of some sixty days the diagnosis of pernicious anemia is doubtful. A true case of pernicious anemia will have had a rise in the red blood count and the hemoglobin to normal within sixty days.

In this case, after some fifty-three days, the red blood count was at a level of 4,000,000, the hemoglobin at a level of over 80 *per cent*. If the patient does not respond within that approximate length of time you have reason to feel that the diagnosis of pernicious anemia is in error.

If you want to do more in the way of diagnosis than this, you may. There are a couple of other things that are done, usually by people who are investigating cases and reporting experiments in the literature. One of these is a bone marrow examination. It is nice to have it. One can do a sternal puncture and demonstrate in the aspirated material the presence of the megaloblasts, the abnormal and immature cells which are present in the marrow of patients with pernicious anemia.

The other thing that we do in working up these cases thoroughly for case reports is the determination of the complete indices shown in Figure 1. Again I emphasize that it is not necessary to have all of these indices in making a clinical diagnosis of pernicious anemia. Also if you can do daily reticulocyte counts and find a marked increase in

reticulocytes within five to ten days, that is a quick way of telling yourself that the patient is responding to treatment.

#### TREATMENT OF PERNICIOUS ANEMIA

So far as the treatment of pernicious anemia is concerned, liver extract is still the treatment of choice. Considering first the patient with pernicious anemia in relapse, we find that we can treat these people with either oral or intramuscular therapy. For oral therapy we have liver extract and stomach concentrate and mixtures of the two. Very few patients are now being treated with these materials, for two reasons. One is that absorption is uncertain in these people and, therefore, you will find a certain number of patients with pernicious anemia who do very poorly on oral medication. Their red blood counts do not come up well; they do not stay up well because of the poor absorption which takes place in the gastrointestinal tract. The other reason is that the patient who is receiving oral medication cannot always be depended upon to take it. That is particularly true of the patients with pernicious anemia. When they get to feeling well, as indeed they do after they have been adequately treated, some of them are reluctant to believe that they are any longer sick and do not want to take any more medicine. Consequently we find that the oral therapy of pernicious anemia is not commonly used, and parenteral therapy is the common method of treatment.

For a patient in relapse, we ordinarily give a great deal more liver than is necessary. If the patient is in the hospital it is common practice to give an injection of liver extract daily. You do not have to, but, on the other hand, you cannot give too much liver extract. If the patient is not sick enough that he needs to be in the hospital, an injection once or twice a week is adequate.

We use, in these days, the so-called purified liver extracts. These are liver extracts which contain from 5 to 15 antipernicious anemia units per milli-

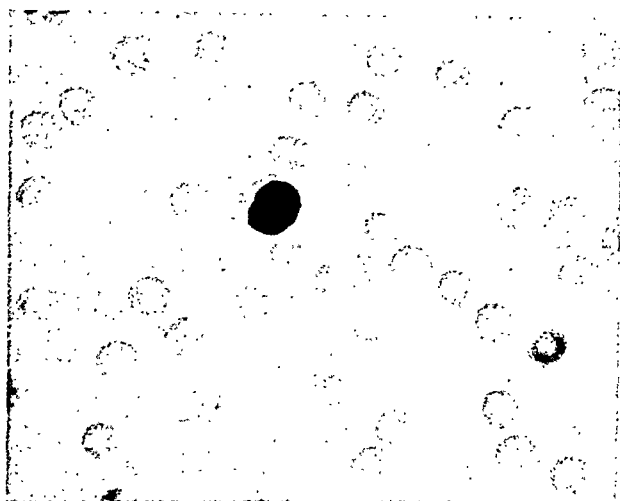


Figure 2. Normal red blood cells.

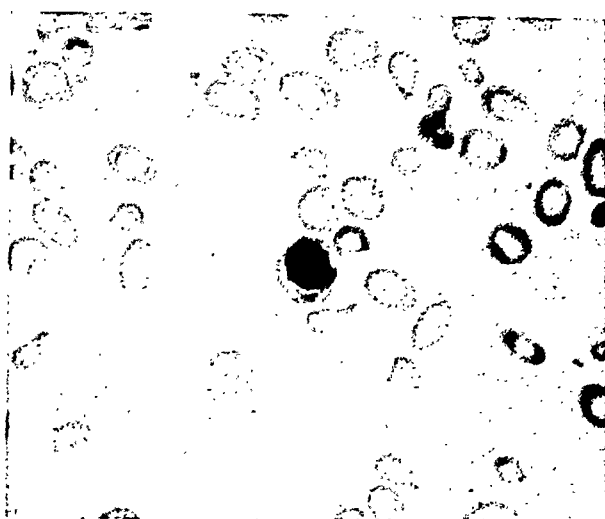


Figure 3. Red blood cells of pernicious anemia.

liter, and I think that there is no reason not to use the 15-unit material. As a matter of fact, most of the 10- and 5-unit materials are 15-unit materials which have been diluted with saline, so that you are paying for more bottles and some salt solution, and so on, and you might just as well use the 15-unit material to start with. If the patient is in the hospital you can administer 1 ml. containing 15 units daily intramuscularly. If the patient is not in the hospital, give 15 units once or twice a week until such time as the red blood count has reached approximately normal. I like to administer the liver extract at least once a week until the red blood count has reached approximately normal, which means a period of about sixty days.

The problem of the treatment of the patient in remission also arises. Now that the anemia has been relieved, and the red blood count is more nearly normal, it is desirable to start to spread the intervals between injections of liver extract. In my own practice I ordinarily give it every couple of weeks for a couple of months and then every three weeks for two more months, and finally put the patient on a schedule of receiving liver extract every four weeks. Most patients will do well on such a regimen. When you arrive at this interval of treatment, 2 ml. of the 15-unit material or 30 units every four weeks is sufficient liver extract therapy for practically all patients. I do not believe that one should make the interval greater than four weeks, because liver extract is not stored quantitatively, and if one starts stretching the interval to six weeks,

eight weeks, and so on, many of these patients will not maintain good red blood counts, no matter how large the individual dose of liver extract. In other words, interval is just as important as dose, perhaps more so. A good working rule is not to make the interval between injections of liver extract greater than four weeks.

#### USE OF FOLIC ACID

About three years ago, folic acid was first described in the treatment of the macrocytic anemias. Most patients with pernicious anemia will respond to folic acid. Their blood counts will go to normal and can be maintained at normal in most cases. When this was discovered, it appeared that folic acid was a very desirable drug, because it is highly effective when taken by mouth in relatively small amounts, and we thought that perhaps we had a considerably better method of treatment of pernicious anemia than with liver extract. However, we now know that folic acid cannot be considered as the proper method of treatment of pernicious anemia, for a number of reasons.

THE course of a patient with pernicious anemia who did not respond to folic acid when we started treatment during relapse is shown in Figure 5. Here was a patient who had a red blood count of just a little over 1,000,000. We started folic acid in doses of 1 mg. a day given intramuscularly. There

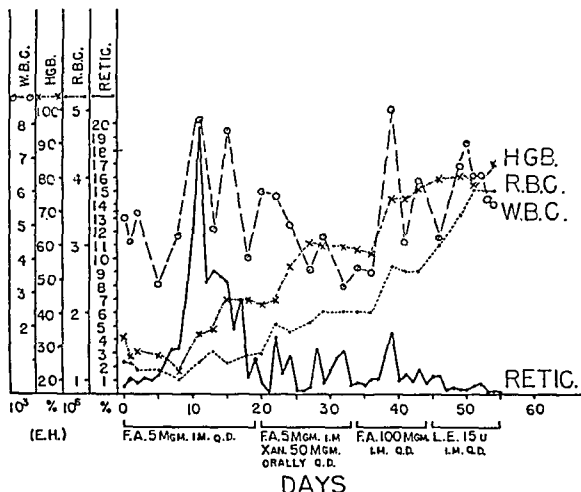


Figure 4. Daily reticulocyte counts in patient with pernicious anemia treated with folic acid.

was a very late delayed reticulocyte response, which was not nearly as big as it looks on the chart; actually it was only about 4 per cent, whereas one would have expected a reticulocyte response nearer 30 per cent. During the second period we raised the dose to 6 mg. a day. We got another very delayed and small reticulocyte response. The dose was raised to 12 mg. during the third period, with possibly another small delayed response. During a fourth period we continued the folic acid with some xanthopterin. Sufficient to say that within some forty-three days of folic acid therapy the patient showed very little improvement. The red blood count and hemoglobin rose only very slightly during that time.

When we gave this patient 15 units of liver extract daily there was a prompt and good reticulocyte response and a very rapid increase in the red blood count and hemoglobin.

Most patients with pernicious anemia do not react in this way but will respond to folic acid, but some of them will not and this is a demonstration of one that would not.

What about the maintenance of pernicious anemia with folic acid? Suppose that we get the red blood count and hemoglobin up to normal, can we

maintain them on folic acid therapy? The answer is, not in all cases.

Table 1 shows what happened to a group of patients who were treated in our outpatient department with folic acid. You will notice that of 32 patients treated, 16 had no change in the red blood count or hemoglobin when they were treated with folic acid instead of liver extract, but two had a moderate decrease of from 300,000 to 500,000 per cu. mm. in the red count and seven had a rather marked decrease of over half a million. In other words, 9 of the 32 patients did not do well on folic acid. Why is that so? When we examine the data (Table 2), we find that in the nine relapses which occurred, five were in patients who were receiving individual doses of 40 to 50 mg. at intervals of three to four weeks, and four were getting a bigger dose, 150 mg., at intervals of three to six weeks. This demonstrates that one cannot give folic acid at intervals longer than two weeks. If given at intervals of two weeks or less or in daily doses no relapses occurred in this series but when we spread the interval to longer than two weeks, we found that some of the patients could not maintain normal blood levels.

In addition, we have found during the last couple

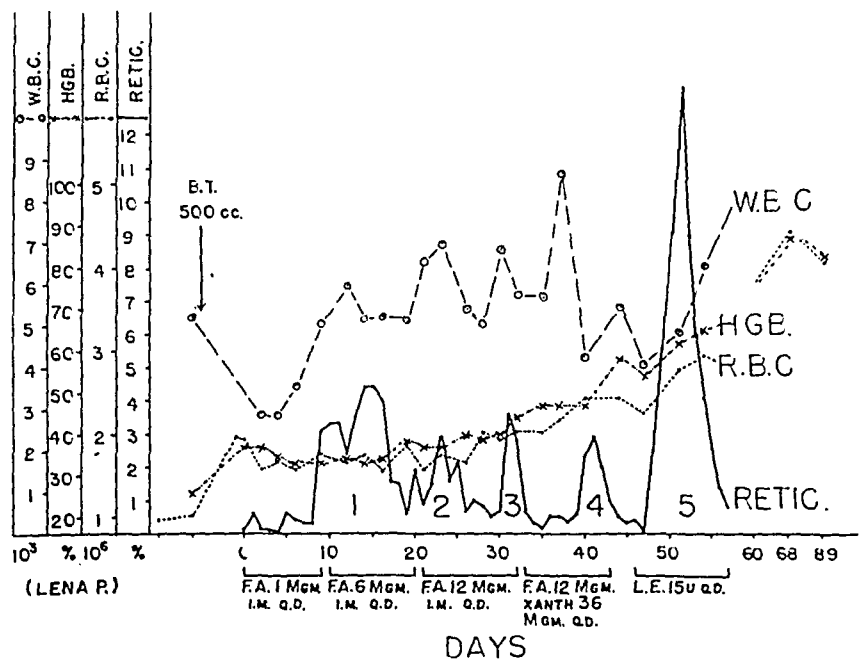


Figure 5. Course of patient with pernicious anemia who did not respond to folic acid treatment started during relapse.

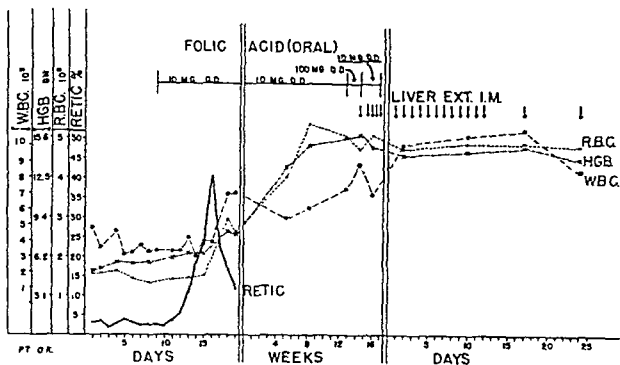
of years that even though we give folic acid daily, we cannot maintain the blood level in all cases. Finally the patients no longer respond to folic acid, they begin to relapse, and their blood count drops. We can say with great certainty, therefore, that there are some patients with pernicious anemia who do not respond to folic acid when they are in relapse; there are other patients with pernicious anemia who cannot be maintained in hematologic remission with folic acid.

Another reason that we cannot use folic acid in treating pernicious anemia is illustrated in Figure 6. Here was a patient with pernicious anemia who was given 10 mg. daily of folic acid. There was a very nice reticulocyte response and a very rapid increase in the red blood count and hemoglobin, so that again at about the end of our sixty-day period the red blood count and hemoglobin were normal. At this point we raised our dose of folic acid because the patient very suddenly began to develop the neurologic disorder which is so much a part of pernicious anemia—he began to have numbness and tingling of the hands and feet. This progressed with extreme rapidity until in a few days he was completely numb from the waist down; his hands were completely numb, and he began to have difficulty in walking, and in general, had a severe neurologic relapse.

TABLE 1	
PATIENTS TREATED 6 TO 12 MONTHS (AVERAGE 10.7)	
No change in red count or hemoglobin	18
Moderate decrease in red count (300,000-500,000 per cubic millimeter)	2
Marked decrease in red count (over 500,000 per cubic millimeter)	7
Improvement in red count (310,000-1,120,000 per cubic millimeter)	3
Treated from relapse with satisfactory response	2
TOTAL	32

We raised our dose of folic acid for only ten days, which is not a long enough test period, but by that time he was so bad we were unwilling to wait any longer and instituted liver extract therapy. At the end of the time shown on this chart he was improving, but it took about six months of intensive liver extract therapy before recovery was complete. We now know that folic acid is completely unable to prevent the neurologic disorders which we see in pernicious anemia—the combined system disease of posterolateral column degeneration—and is completely unable to control it.

Figure 6. Course of pernicious anemia patient with good reticulocyte response to treatment with 10 mg. folic acid daily. Red blood count and hemoglobin were normal after sixty days, but patient then developed a neurologic disorder. Folic acid dosage was raised, but patient did not respond and liver extract therapy was instituted after ten days. Recovery was complete only after about six months of very intensive liver extract therapy.



WHAT about the combined use of folic acid and liver extract? I think that liver extract alone is satisfactory treatment and probably does not need folic acid added to it. There is some evidence, however, that if one does use folic acid in addition to liver extract, there may be a faster improvement in the blood and perhaps somewhat higher levels can be maintained.

There are on the market at this time liver extracts for parenteral injection which contain folic acid. I do not recommend these preparations because they contain relatively so little folic acid that it is not enough to make any difference. If you want to use combined therapy I recommend that you give parenteral liver extract at intervals as we have described and, in addition, give the patient one tablet of folic acid a day by mouth, 5 mg. a day.

I brought with me this morning one of my patients who is also a good friend of mine. This lady was first admitted to a local hospital in February 1945. At that time she was 54 years of age, and her main complaint was that of difficulty in walking. She told us that for two years she had had a gradual onset of staggering, numbness of the feet, and noted incoordination in performing moderately skilled acts.

When we examined her in the hospital we found that her gait was extremely ataxic; she had some spasticity of her lower extremities; there was loss of position sense in the lower extremities—you could move her toes up and down and she didn't know in which direction you were moving them.

There was loss of vibratory sensation—she could not appreciate the vibrating tuning fork below the hips; all of her deep reflexes were hyperactive, that is, they were increased over normal; there was a Babinski reflex present bilaterally, and the Gordon and Hoffmann signs were also present. She demonstrated, therefore, a considerable degree of posterolateral column degeneration, the combined system disease seen in pernicious anemia. She was not very anemic. Her red blood count was 3,790,000; her hemoglobin was 12 gm. or 77 per cent by our scale; her white blood count was 4,200, below normal; her color index was a little bit over 1; her mean corpuscular volume was 106 cubic microns, which means that the cells were bigger than normal. She had no acid in her stomach after stimulation with histamine.

We made a diagnosis of pernicious anemia and recognized that the neurologic disorder was more severe than usual for the degree of anemia present. We treated her in this instance with a crude liver extract, although purified liver extract would have been entirely satisfactory. She received daily injections of 5 ml. of 2-unit liver extract all the time she was in the hospital. After she left the hospital she was treated with 30 units of purified liver extract weekly for four weeks, then 30 units every two weeks for three times, and then the same dose every four weeks up to the present time.

In sixty days her red blood count had risen to 4.76 million, the hemoglobin had risen to 15.6 gm. or 100 per cent, and the white count had come up

TABLE 2  
FOLIC ACID MAINTENANCE

ROUTE	INDIVIDUAL DOSE	INTERVAL	NUMBER TREATED	NO CHANGE	RELAPSE	IMPROVEMENT
Intramuscular	45-50 mg.	2 weeks	2	0	0	2
Intramuscular	40-50 mg.	3-4 weeks	13	7	5	1
Intravenous	150 mg.	3 weeks	1	1	0	0
Intramuscular	150 mg.	3-6 weeks	9	5	4	0
Oral	10-40 mg.	Daily	16	13	0	3
TOTALS			41	26	9	6

to 6,350. There was marked improvement in gait and coordination. By October 1945, ten months after treatment was started, the patient told me one day she was even able to run a little bit. Since that time she has been able to walk perfectly normally; the abnormal reflexes have disappeared, and so far as the patient is concerned she is asymptomatic and in excellent health.

Although she did not look very sick at the time we saw her, it is of interest that her weight, which was 111 pounds at that time, has come up to its present 133 pounds.

This patient demonstrates one of the more unusual types of pernicious anemia patients where the neurologic symptoms are more outstanding than the anemia. Especially vigorous liver extract therapy is required when the neural disturbance is marked.

I ALSO want to mention briefly the other part of this subject, namely, the abuse of liver extract. If you are not absolutely certain that a patient has pernicious anemia but you think he may have, it is perfectly justifiable to give a therapeutic test with liver extract and it should be done as outlined for the patient with pernicious anemia as presented earlier. A trial of sixty days is long enough, and don't do what is so often done—give liver extract two to three times a week for a year or two or three years or longer.

If you are going to treat a patient who you suspect has pernicious anemia, use parenteral liver extract. Do not use mixtures of liver and iron which

come in capsules. That is shotgun medication. You say, "Well, what if it is? If it is satisfactory, why shouldn't we use it?" There are two reasons. One is that if it does work you do not know which was effective, the liver or the iron, and you have no way of knowing which to use in continued treatment. Iron deficiency anemia is undoubtedly the most common type of anemia and you usually want to treat with iron. If you give the combined preparation, you give a preparation that is far more expensive than the simple iron medication.

If you have treated the patient who you suspect may have pernicious anemia with liver extract and, if within sixty days the red blood count has not shown the proper improvement, you must think of other diseases which can give a peripheral blood picture similar to that of pernicious anemia. These include, particularly, multiple myeloma or plasma cell myeloma; certain cases of renal insufficiency that have marked nitrogen retention and are going toward uremia will develop a macrocytic anemia; certain of the lymphomas, lymphosarcoma and Hodgkin's disease particularly, may at times be associated with an anemia which resembles pernicious anemia.

Finally, certain cases of carcinoma, particularly carcinoma of the stomach, may be associated with a macrocytic anemia. These anemias are not associated with megaloblastic hyperplasia in the marrow, so if you can get a marrow examination it will help you. If you cannot get a marrow examination all you have to remember is that if you have treated that patient for sixty days with liver extract and he has not responded, it is not pernicious anemia and you must therefore think of a different disease.

## Surgical Complications of Peptic Ulcer

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PEPTIC ulcer, according to all studies, is increasing in frequency in this country, and at present from 2 to 5 per cent of all hospital admissions in general hospitals consist of peptic ulcer patients. It has been estimated that among chronic diseases, peptic ulcer in this country ranks tenth as a cause of death and twelfth as a cause of invalidism and absence from work.

A principle to which most of us can subscribe, I think, is that the majority of peptic ulcers can be handled successfully on a medical, nonsurgical regimen, and perhaps 75 per cent of ulcers in general can be controlled satisfactorily by dietary and medical measures.

It is the complications which call for surgical treatment, of course, and these complications fall into fairly definite categories. Before dealing with the complications which are of surgical significance, however, I would like to speak of a trend which I note among my fellow surgeons and in the literature, namely, the tendency to look with growing suspicion on gastric ulcer as compared with duodenal ulcer.

There is a very high percentage of error in the recognition of the benign chronic gastric ulcer as compared with the early carcinomatous ulcer. In my own series of cases I find that 12 per cent of the patients on whom I have done gastric resection for supposedly benign ulcers turn out to have carcinoma in ulcers. Since the risk of an adequate gastric resection is in terms of 1 or 2 per cent and since the chance of any particular ulceration in the stomach being malignant is considerable, perhaps

10 or 15 per cent, obviously a case can be made out for the primary treatment of chronic gastric ulcers by gastric resection. That is a view that I subscribe to wholeheartedly.

The picture of carcinoma of the stomach, as you know, is an extremely dismal one, and the patients with carcinoma of the stomach that the surgeon is most likely to cure are these early cases in which there is microscopic cancer in the ulcer, sometimes not detectable by any of the diagnostic measures short of serial section by the pathologist. Therefore, a statement which we hear at times now is that chronic duodenal ulcer is a medical disease until complications have arisen which do not respond to medical treatment; chronic gastric ulcer, on the other hand, is a surgical lesion.

In studying the record of gastric surgery for the past five years in our hands with respect to the indications for operation, I find that these indications are about as follows: (1) Perforation called for surgical operation in 24 per cent of this series of cases. (2) Intractability, which has meant for the most part penetration and fixation to the surrounding tissues, called for operation in 42 per cent of the cases. (3) Obstruction of the pylorus or duodenum required operation in 12 per cent, and gross massive hemorrhage necessitated operation in 22 per cent. However, in 40 per cent of this group of cases, two or more of these complications existed in the same patient at the time of operation.

I should like to focus my attention on two principal ones, namely, obstruction and gross hemorrhage. These two complications can be illustrated by the two convalescent patients who are here.

Before going on to the subject of obstruction as a cause for surgical treatment, I would like to speak for a moment of the question of intract-

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ability or penetration. Chronic ulcers of the stomach or duodenum may, of course, burrow into neighboring structures; they may attain enormous size, and they pose some of the most difficult problems in surgery. The intractability when you see the ulcer is on an obvious basis. No longer is the disease confined to the stomach, in many instances, but the pancreas, the liver, the parietal peritoneum, or other structures may be involved; therefore, the gastroenterologist has been treating not ulcer alone but inflammatory disease of other intra-abdominal structures, and it is not surprising that the success of nonsurgical management, in this type of case, is limited.

Figure 1 is an x-ray of the stomach of a 74-year-old man with a high lesser curvature ulcer which I think is well shown. This lesion had burrowed into the pancreas. The patient was suffering from constant severe pain in the abdomen and in his back, vomiting, with severe depletion, hypoproteinemia, and anemia. It was necessary to treat this by total gastrectomy, which in this instance was done through the chest by a transdiaphragmatic approach.

ANOTHER burrowing ulcer of the same type is shown in Figure 2; this patient is a 49-year-old woman. The ulceration is enormous. The base of the ulcer was the pancreas, and in treating that case it was necessary to do a total gastrectomy and to remove the spleen and part of the pancreas. It seems to me that one could never hope to treat successfully a large, fused inflammatory mass in this type of lesion, which is unusual, of course, by dietary measures.

The specimen after operation may be seen in Figure 3.

Another illustration of a penetrating, burrowing type of ulcer is shown in Figure 4. In this instance a gastrocolic fistula resulted and the barium you see in the stomach was given by means of a barium enema. This patient was treated with a two-stage operation, a preliminary proximal colostomy, and later resection of the stomach and colon.

When we come to the matter of obstruction from chronic gastric or duodenal ulcer, there are in general two varieties. Obstruction of the pylorus or duodenum can result from active lesions in the vicinity producing edema and spasm. On the other hand, the obstruction may be due to chronic cicatricial stenosis with or without superimposed spasm. In many instances there may be obstruction of the pylorus when the ulcer lies rather remotely from the pylorus, presumably a matter of spasm. Those cases can be handled much more successfully by the standard method of naso-gastric suction, attending to fluid requirements, and maintaining nutrition, than can the cases that have cicatricial organic block in the region of the pylorus. Unfortunately, however, it is frequently impossible to make this distinction on radiographic study. One does not always know whether the obstruction present will respond to nonsurgical treatment. These cases are very interesting ones and call for very nice judgment in their management.

The clinical picture usually is that of persistent vomiting with or without pain; dehydration may develop rather rapidly; there may be hemoconcentration with red cell count elevated and hematocrit elevated; there may be even oliguria and elevation of the nonprotein nitrogen. When the dehydration is corrected, however, we may find that actually an anemia exists, or a hypoproteinemia. The stomach is ballooned out; it may be atonic; its wall may be edematous—very poor tissue for surgical procedure. There may be a secondary gastritis. There may be decaying food present in the stomach. Incidentally, in my experience it is almost



Figure 1. High penetrating lesser curvature benign gastric ulcer; total gastrectomy by transthoracic approach.



Figure 2. Benign gastric ulcer with penetration of pancreas; total gastrectomy, splenectomy, resection of pancreas.

impossible to empty out one of these hugely dilated stomachs satisfactorily by a naso-gastric suction procedure, or even by the old-style large gastric tube passed by mouth.

A word should be said about the use of x-rays in this situation. Sometimes we are over-enthusiastic regarding these patients with pyloric obstruction, and try to fill the stomach enough to outline it completely, or we persist in an attempt to show the type of lesion at the pylorus, and we may do the patient a good deal of harm by filling up his stomach with barium which is very difficult to remove. I think the x-ray should be used cautiously in the diagnosis of this condition.



Figure 3. Benign gastric ulcer with penetration of body of pancreas.

THE management which can be recommended in such cases is essentially treatment of the patient's general condition and decompression of the stomach. The general treatment involves fluid and electrolyte replacement; it also involves administration of vitamins and proteins and, in many instances, blood transfusion, these measures being controlled by fairly frequent use of laboratory determinations.

The naso-gastric tube is passed and it is kept on

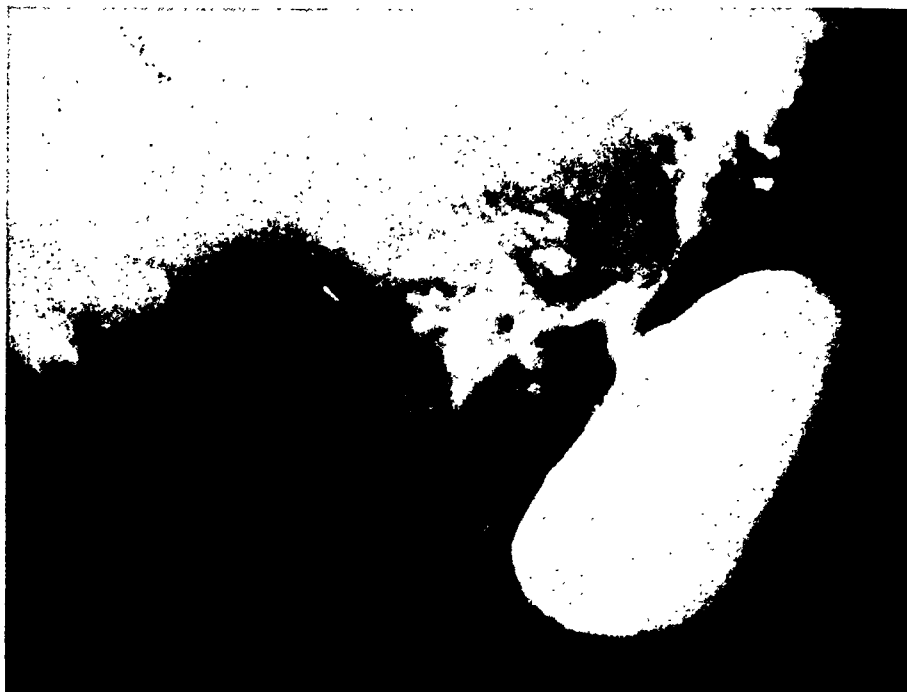


Figure 4. Penetrating benign gastric ulcer and gastrocolic fistula; two-stage repair.

constant suction. It is irrigated at frequent intervals in the hope of favoring better drainage and making certain that the tube is open at all times.

Presently a decision has to be made in this program. Is the patient improving? Will he continue to improve, or has he progressed as much as one can expect? That is a very difficult question. All the improvement may result from the general treatment of the patient while the obstruction in the pylorus or duodenum persists. One can get some help on this question by careful measurement of gastric balance, that is, measuring all the fluid obtained from the stomach and balancing against that fluid which has been taken by mouth or used in irrigation. Actually, however, if after two or three or four days it becomes evident that a high degree of obstruction still persists, and if the patient's general condition has been properly treated, then I think it is time to face the indications for surgical treatment.

Figure 5 illustrates the case of a 52-year-old man with a chronic duodenal ulcer and with gastric tetany and alkalosis, which results where a great deal of acid secretion has been lost through the vomitus, with reduction in the chloride values in the blood. This patient was treated about as I have outlined, and after three or four days was

operated upon and subtotal gastric resection was carried out.

Another patient was a 70-year-old man who came into the hospital with a history of vomiting and epigastric pain over a period of about four weeks. During the week before admission to the hospital he said that he had vomited everything he had taken by mouth. The patient was anuric at the time of admission. The nonprotein nitrogen was elevated; his red count and hemoglobin values were elevated, as were his plasma protein concentrations. He had unusually severe dehydration. This x-ray of the stomach was made before the patient came into the hospital, otherwise it would be hard for me to argue that we do not like to put a lot of barium into the stomach in this situation. You can see, however, from the moth-eaten appearance of the gastric wall, particularly in the fundic area, that there is a good deal of retained food and a good deal of gastritis present.

This patient was treated with proper fluids and electrolytes and vitamins as required. A careful measurement of naso-gastric balance was made, and we found that after three or four days the evidence indicated that he still had complete block of the pylorus; therefore he was operated on. In this instance a posterior gastroenterostomy was

done with a jejunostomy for continued feeding and maintenance of fluid balance.

#### DISCUSSION OF PATIENTS

The first patient is presented through the courtesy of Dr. Ernest Bright. The brief abstract of the case illustrates pyloric stenosis due to duodenal ulcer, successfully treated surgically.

This man is 60 years old and was admitted to the hospital May 29, 1948, complaining of pain in the pit of his stomach, and vomiting. He had had recurrent attacks of upper abdominal pain for about five years and recurrent attacks of vomiting for three or four months prior to admission. Pain was described as gnawing in character. He had lost 30 pounds in weight in the three or four months prior to admission to the hospital.

Laboratory values at the time of admission: hemoglobin 17.9 gm. per 100 cc.; red count 6,000,000, indicative of the dehydration previously referred to. On gastric analysis there was free hydrochloric acid ranging from 30 to 106 units. X-ray studies were made, and obstruction, presumably from a duodenal ulcer, was demonstrated.

The patient was placed on gastric suction and given parenteral fluids, and on June 2, 1948, subtotal gastric resection was done. There was a large duodenal ulcer just distal to the pylorus. The ulcer was not resected, but all of the pyloric mucosa was removed. The convalescence was uneventful and he was discharged on the twelfth postoperative day.

I have talked with this man. At present he is in very good health. He has no restrictions in his diet. He has regained 30 pounds in weight. He is back at work. In fact, he has made a complete recovery in every way.

The second complication which I want to dispose of very briefly is that of acute massive hemorrhage from peptic ulcer. The second patient illustrates this complication and its successful management. A brief abstract of his case is presented through the courtesy of Dr. McGinnis.

This man is a 55-year-old clerical worker who came into the hospital January 28, 1948, because of diarrhea, with 15 pounds weight loss, and tarry stools during the previous three or four weeks. He had had a previous admission to the hospital March 2, 1944, because of several bloody and tarry stools associated with weakness and faintness. His blood pressure when first seen, March 1944, was 78/55. He had given a rather vague history of abdominal



Figure 5. Chronic duodenal ulcer with cicatricial stenosis, gastric tetany, gastritis, and anuria from dehydration; restoration of fluids and electrolytes followed by posterior gastroenterostomy and jejunostomy for alimentation.

symptoms for the previous two years. One year before, an x-ray of his stomach and duodenum was said to have been negative.

On admission the hemoglobin values were 8.2 gm. per 100 cc., the red cell count 2.79 million. These values subsequently fell. His red count on the day before operation was 1.64 million. He received 1500 cc. of whole blood within the next three days, but his pressure continued to remain below normal and he continued to pass tarry stools. Therefore, on the fifth hospital day subtotal gastric resection was performed. A chronic thickened duodenal ulcer was found on the posterior wall and two bleeding points were visible at the base of the ulcer. The ulcer was not resected, but subtotal gastric resection was performed, during which procedure the patient received an additional 1700 cc. of whole blood. The postoperative course was uneventful and the patient was discharged on the fifteenth postoperative day.

THE case just described illustrates, therefore, the management of massive hemorrhage from a duodenal ulcer by subtotal gastric resection during the phase of acute hemorrhage and, very importantly, with adequate blood replacement before and during the operation.

The patient got along reasonably well following that operation in 1944, until the second admis-

sion. At that time he came in with a history of epigastric distress and vomiting and difficulty with his bowels—diarrhea. His laboratory studies showed severe anemia and depletion, elevation of the non-protein nitrogen, and a reduction of the carbon dioxide-combining power of the plasma to 49 volumes per cent. The barium enema showed the barium to enter freely into the stomach. In other words, this patient had developed, during the three and a half or four years, a gastrocolic fistula on the basis of a marginal ulcer.

On the ninth hospital day a gastrojejunal fistula was resected and end-to-side retrocolic gastroenterostomy was done. The patient's convalescence was interrupted by evidence of a subdiaphragmatic abscess, but subsequently his progress has been extremely satisfactory.

I have talked with him and he is a very grateful patient. He takes three meals a day now almost without restriction and he has regained his weight.

There are no symptoms referable to his stomach.

I would like to add a word about this method of handling acute massive hemorrhage from peptic ulcer. There is a growing interest in the surgical treatment of massively bleeding gastric or duodenal ulcer following adequate blood replacement. At present we are running a series of cases using, roughly speaking, alternate cases as controls. We operate on about half the patients, and about half of them we treat by blood transfusions and other medical measures. The result tentatively supports the conclusion that these patients can be operated on successfully by subtotal gastric resection after adequate blood replacement.

The mortality rate in 40 patients operated upon has been 12.5 per cent; the mortality rate in those not operated upon being 25 per cent. All the patients were bled out at the time operation was undertaken.

#### VAGOTOMY MORE SUCCESSFUL COMBINED WITH GASTROENTEROSTOMY

GASTROENTEROSTOMY performed concurrently with vagotomy has yielded encouraging results as a treatment for duodenal ulcer, five Duke University physicians report after a four-year study of the effects of vagotomy in 104 patients with intractable, frequently recurring, or complicated peptic ulcer.

The studies indicate increasing belief that the usefulness of vagotomy is limited by side effects or complications rather than by failure of ulcers to heal. Vagotomy has effected ulcer healing after gastroenterostomy or subtotal gastric resection, and has aided treatment of benign ulcer, but persistence or recurrence has been frequent.

The conclusion is that gastroenterostomy should be added to vagotomy if possible when this operation is performed in preference to gastric resection. The studies were made by Drs. K. S. Grimson, R. W. Rundles, G. J. Baylin, H. M. Taylor, and E. J. Linberg.

#### RATING SYSTEM ESTABLISHED FOR MENTAL HOSPITALS

AN inspection and rating system for mental hospitals in the United States and Canada has been established by the American Psychiatric Institute for the purpose of stimulating the same kind of voluntary improvement in public and private mental hospitals that a similar procedure developed in 1918 by the American College of Surgeons achieved in general hospitals.

Dr. William C. Menninger, the Association president, has announced the appointment of Dr. Ralph M. Chambers, until recently superintendent of Taunton State Hospital, Taunton, Massachusetts, as director of the project. A central inspection board of ten psychiatrists under the chairmanship of Dr. M. A. Tarumianz, superintendent of Delaware State Hospital, will serve as the governing body. The work is made possible by a grant from the Psychiatric Foundation.

The plan is for the hospitals to request inspection (many already have done this). The institutions will be appraised against a set of minimum standards covering every phase of operation and facilities and recommendations made after inspection. If improvements do not bring an institution up to standard within a reasonable time, the institution will be rated as sub-standard. This process will provide administrators, boards, legislative, and community leaders with a factual basis for their efforts to obtain appropriations or other measures needed to achieve the desired improvement.

## DIAGNOSTIC CLINIC

# Diet in the Treatment of Hypertensive Disease

IRVINE H. PAGE\*, A. C. CORCORAN†, AND ROBERT D. TAYLOR†

CLEVELAND CLINIC, CLEVELAND

THE quickest way to start an argument among the people who work with hypertension is to mention the Kempner rice diet, a low sodium diet, or any kind of diet at all. That is for a very good reason. The trouble is that the disease in the patients in whom you are studying its effects has protean manifestations.

Hypertension, as you know, runs the gamut from a very malignant form to forms that are extremely benign, and that is what causes the confusion. Another factor contributing to the confusion is that there are not enough objective methods used in the study of the patient. As you all know, this business of taking a few blood pressures, calling that the control period, and starting the diet or treatment of the patient leads to confusion. If you will analyze most of the papers on the subject you will find that the difficulty usually comes from the fact that the cases have not had a sufficiently long control period. (Figures 1 and 2.)

The blood pressure alone, in short, is an insufficient datum on which to follow the course of the disease. One must follow other changes, especially those in the arterioles of the eyegrounds, before one knows what he is doing. If the blood pressure is accepted without sufficient control, you may very easily be misled. That, I think, is probably the chief cause for misunderstanding in the use of diet. If you will think over your own cases, you will recall that many of the most dramatic falls

in blood pressure occurred in the absence of any definitive treatment and so reflect the variability of the disease.

There is still one other point that I think should be mentioned. It is becoming increasingly apparent that hypertension is no simple disease. We like to catalog it and say that it is renal; it is this, that, or the other; in other words, we like to think there is some primary, easily discoverable cause. Yet the good old days are over when we could tell exactly the cause of hypertension. The more we study it, the more we realize that it is probably of multiple etiology, and it is the constant interplay, the mosaic, which finally spells the entire clinical picture of hypertension.

There are some patients in whom the nervous factors predominate, and one might almost think the nervous system was the primary cause of the disease. It may well be. There are others in whom it is perfectly obvious that the renal factors are the predominant ones. There are others in whom the adrenal factors are most important. It is very likely that in this whole hodge-podge of disease we have cases in whom the etiology is not the same. That is important, because it is quite clear now that some patients respond to dietary treatment and many do not, so one cannot say categorically that hypertensives respond or do not respond; it depends entirely with what you are dealing.

My task is really to set the problem, and Dr. Corcoran will discuss briefly the physiologic factors and Dr. Taylor will present the clinical phase of our own results.

Let me review for you the different types of dietary treatment which have been really seriously

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considered as treatments for hypertension. There is, first, the low calorie diet with weight reduction. I think everybody recognizes that weight reduction reduces the amount of tissue through which the heart has to pump blood and therefore it is an accepted way of treating hypertension; I believe there is no argument about that. The war experience has been of a good deal of interest in this connection. As you know, we got reports from Europe that in almost all cases the blood pressure went down in people who had been in concentration camps and had undergone great deprivation and starvation. Indeed, the blood pressure of the entire population went down, and on feeding these people it began to go up again. I think that almost proves that a low calorie diet is beneficial as regards hypertension.

Now we go to a little more specialized form of diet. There is an old belief that protein in some way or another is disadvantageous to the patient with hypertension. That is an idea which at the present time has been largely discredited. The low protein diet is used hardly at all. Yet one is not sure whether it should have been discarded as quickly as it was. It might possibly be that there are amino-acid deficiencies that result from low protein diets which have a more specific effect on arterial pressure than does an overall low protein consumption.

The third form of diet is the low salt diet. That is the one that is being most actively discussed, and, as you know, many people believe that any effects of the rice diet, the so-called Kempner diet, are due chiefly to the fact that it is a low salt diet.

As you all know, it has taken almost half a century to reconnect the kidney with the circulation, thanks to undue preoccupation with the cardiac function of the vascular tree. Back in 1903, Widal was probably the first to point out that edematous nephritics excrete little salt and water. In 1932, Newburgh showed that if adequate water was given there was normal excretion of salt and water. Achard in 1901 showed that salt given in congestive failure is not readily excreted and that edema increases. Schemm in 1942 made his important contribution that cardiac edema can be effectively treated without fluid restriction if sodium is restricted, and Schroeder showed the importance of sodium versus chloride.

Ambard in 1905 recommended chloride restriction for treatment of hypertensives, but he had no very good reason for doing it and because the studies were not very adequate it was dropped again. Allen in this country and Volhard in Germany recommended the diet again, and in going over Allen's results I think one must admit that some of the cases did show definite falls in blood pressure, but again it was a very controversial issue and after several other studies had failed to confirm these results, the method was largely dropped again.

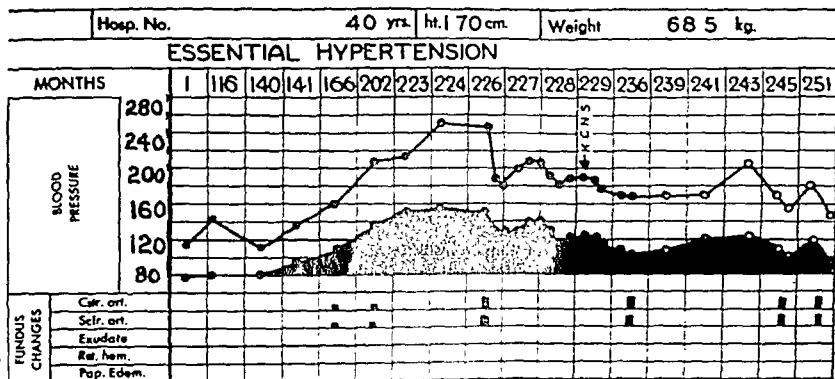


Figure 1. Each dot represents the average of 14 blood pressure readings, and as shown, there have been fluctuations in the blood pressure. Fluctuations may be so great as to make it impossible in some patients fairly to evaluate an experimental treatment. Compare with Figure 2.

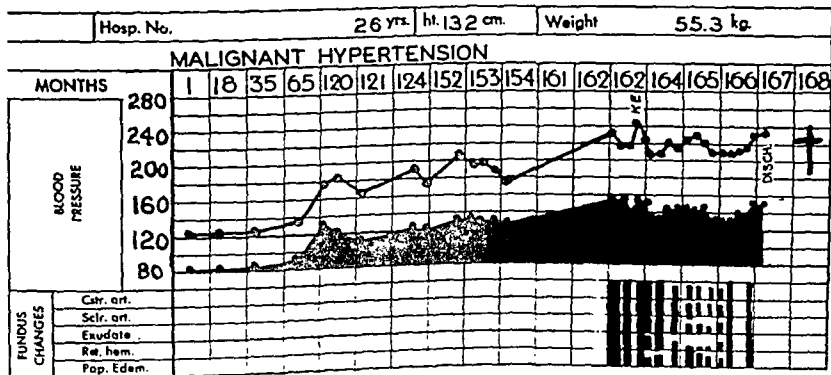


Figure 2. The record here is similar to that shown in Figure 1. The blood pressure steadily increased and the patient died at the end of the study.

The importance of salt in the production of vascular lesions by desoxycorticosterone acetate was shown by Selye, Grollman and Harrison in 1945 had 6 cases which were reasonably well studied and 4 did show definite falls in pressure. A Hollander named Viersma, whose work I came

across but recently, did a beautiful but limited study on this subject. No overall adequate study has subsequently appeared, and that is where the matter now stands. Like many other clinics, we have been actively and belatedly studying the matter for the past three years.

I am sure you are all familiar with the Kempner diet. It is a very boring one. Many patients will not stay on it. On the other hand, there is little doubt that some patients seem benefited if they will continue the diet. We believe that it is to be thought of as an experiment well worth prosecuting but not as an established therapeutic procedure. I am sure Dr. Kempner would agree.

There is one other diet which is also highly controversial, and that is the low cholesterol diet in the treatment of vascular diseases. As you know, there is a definite belief that the ingestion of cholesterol leads to the deposition of cholesterol in the vessels and that, of course, is particularly important in hypertension. Views on the usefulness of this diet, especially in coronary atherosclerosis, are also highly variant. I recently attended a meeting in Chicago of the American Society for the Study of Arteriosclerosis where about every other speaker wavered one way or the other.

I think one could say categorically that the evidence is wholly insufficient at the present time to withdraw cholesterol-containing foods from the

diet. If there is manifest hyperlipemia, that is another proposition, because I think that if hyperlipemia is long sustained, it unquestionably leads to the deposition of cholesterol in the vessels. It may well be that a low cholesterol diet is advisable, but in the management of patients with hypertension or with coronary disease I think there should be much better evidence than is currently available to justify withdrawing important food elements such as milk, butter, etc., from the diet on the basis that one was going to prevent the further spread of arteriosclerosis.

To review briefly, the diets said to be useful in the management of hypertension are: (1) the low calorie diet, a successful form of treatment; (2) the low protein diet which should be restudied, I think, and any of you who want to take up an important clinical problem will be doing the field a great service if you will tackle that one; (3) the low salt diet, and the variation between the ordinary low salt diet and the drastic reduction, that is, getting the sodium below 200 mg. in the urine; (4) the Kempner rice diet, and (5) low cholesterol diet.

## PHYSIOLOGIC FACTORS

**I**N CONSIDERING the physiologic indications for the various forms of dietotherapy, let us go over them more or less in the same order as Dr. Page has done.

First, as to the low caloric diets, what are they known to do? What could be their usefulness? Weight reduction is known to decrease cardiac work. While the estimates vary, one accepted figure is that a 3 per cent decrease in body weight leads to a 10 per cent decrease in cardiac work. Such a decrease in cardiac work can and must be of advantage to the hypertensive patient and more particularly to the patient whose cardiac function is in some degree prejudiced. So we have a good solid basis for a low caloric diet, in some people at least, certainly in those who are overweight.

What about low protein diets? The one definite indication that is established beyond any doubt is that a low protein diet does decrease azotemia in patients who are in renal failure. Such diets greatly increase survival in nephrectomized animals. Very recently there has been reported the successful treatment of terminal renal disease with diets containing approximately 0.5 gram of protein per kilogram of body weight. Such diets have a real

indication and a real field of usefulness, more particularly when the total calories are more than are usually considered adequate.

Then there is the experimental indication for a low protein diet in hypertensive disease. Selye has given animals a crude mixture of anterior pituitary powder. Animals given this powder sometimes develop hypertension and arterial disease. Hypertension and arterial disease occur more readily and more extensively when the diet is rich in protein and more particularly when it is rich in certain proteins, as, for instance, casein; it does not occur when the diet contains lactalbumin. That is an experimental indication which it is difficult at this point to analyze. The suggestion, of course, is that in patients with Cushing's disease, for example, a low protein diet should be recommended rather than the high protein diets which are customarily used, since such a low protein diet may decrease the production of adrenotropic hormone and cut the vicious cycle of this unusual disease. But the carry-over to clinical essential hypertension is not at all clear.

What are the definitive indications for the low sodium diets? Of course, glomerulonephritis with

edema, congestive heart failure, cirrhosis with ascites, and other conditions in which sodium is abnormally retained may be listed. An experimental indication at which Dr. Page hinted is again derived from the work of Selye. Rats treated with desoxycorticosterone in huge doses develop arterial disease and hypertension. When sodium is removed from the diet that arterial disease does not develop. When sodium is added to the diet the disease becomes much more severe, and when either the potassium or ammonium ion is substituted for sodium, the arterial damage is minimal. There is an experimental indication for sodium restriction in conditions associated with nephrosclerosis or at least in those in which adrenal hyperactivity is suspected.

Sodium retention in heart failure is of special interest. The mechanism of the sodium retention in congestive heart failure is not fully established. It may in part be a combination of adrenal activity with an increase in the production of steroids of the desoxycorticosterone series and a positive sodium retention. There is also another mechanism. In the patient with congestive heart failure, especially during even mild exercise—as when he is walking around—the renal blood flow falls off very seriously and as the renal blood flow and glomerular filtration fall, the amount of salt which can be excreted decreases and the patient tends to retain sodium as a result of his daily activity. Treatment is bed rest, low sodium diet, adequate fluid, and digitalis and mercurials.

With the regard to diet and vascular disease in the average patient, we have the indication in overweight for a low caloric diet; in azotemia and renal failure, for a low protein diet; and of a low sodium diet in cases of sodium retention in congestive heart failure, in Cushing's disease, and, possibly, as Dr. Page has mentioned, in hypertension.

The evidence, both experimental and clinical, in hypertension itself is much more tenuous and there is really no good sound physiologic ground for saying that this or that patient is going to re-

spond to a low sodium diet by a reduction of blood pressure; even when a reduction of blood pressure occurs we do not know the mechanism. It is probably not a failing of adrenal activity. Such evidence as we have seems to indicate a deviation of the activity of the adrenal cortex into some other line of steroid formation from those which maintain hypertension.

We have these positive indications. All of them are to a certain extent met with the rice diet. It is low in sodium, low in calories, rich in carbohydrate, low in protein. It is, in a word—and in a good sense of that word—a shotgun prescription. But the indications for sodium restriction alone are better met with a low sodium diet. Neither the rice nor the low sodium diets are very palatable. I refer you to Job VI:6, "Can that which is unsavory be eaten without salt?" as a suitable text to this point.

As to the physiologic effects of these diets, we should remember that the low protein and low caloric diets and those low in sodium tend to decrease blood and interstitial fluid volume, and that this effect may be a very desirable one in some patients. In most, the consequent decrease in the over-all renal excretory power which occurs is not a serious matter at all. They are not taking very much, they are not putting out very much. A little decrease of kidney function due to a decrease in blood volume is not a bad thing. However, in a patient whose renal function is already prejudiced, whose kidneys cannot do their normal work of maintaining in the body normal concentrations of sodium and which cannot respond to a decrease in sodium by grabbing onto the sodium in tubular fluid and transferring it back into the blood, a low sodium diet may be perilous. The result of sodium depletion is a state of renal failure and azotemia, extreme weakness, a sort of Addison-like syndrome.

If a patient happens to be on a low sodium diet and is subject to vomiting, diarrhea, or severe trauma, with consequent sodium loss, the need for careful control is imperative, even in the absence of any severe renal failure.

## CLINICAL STUDIES

I AM to report some of the results we have observed among patients with hypertensive vascular disease receiving low sodium diets. To digress a moment, it seems a sad commentary

upon American medicine that two of our present voguees are in reality pretty ancient. I think it was around 1905 that the Mayos suggested the use of vagotomy in the treatment of peptic ulcer. It was

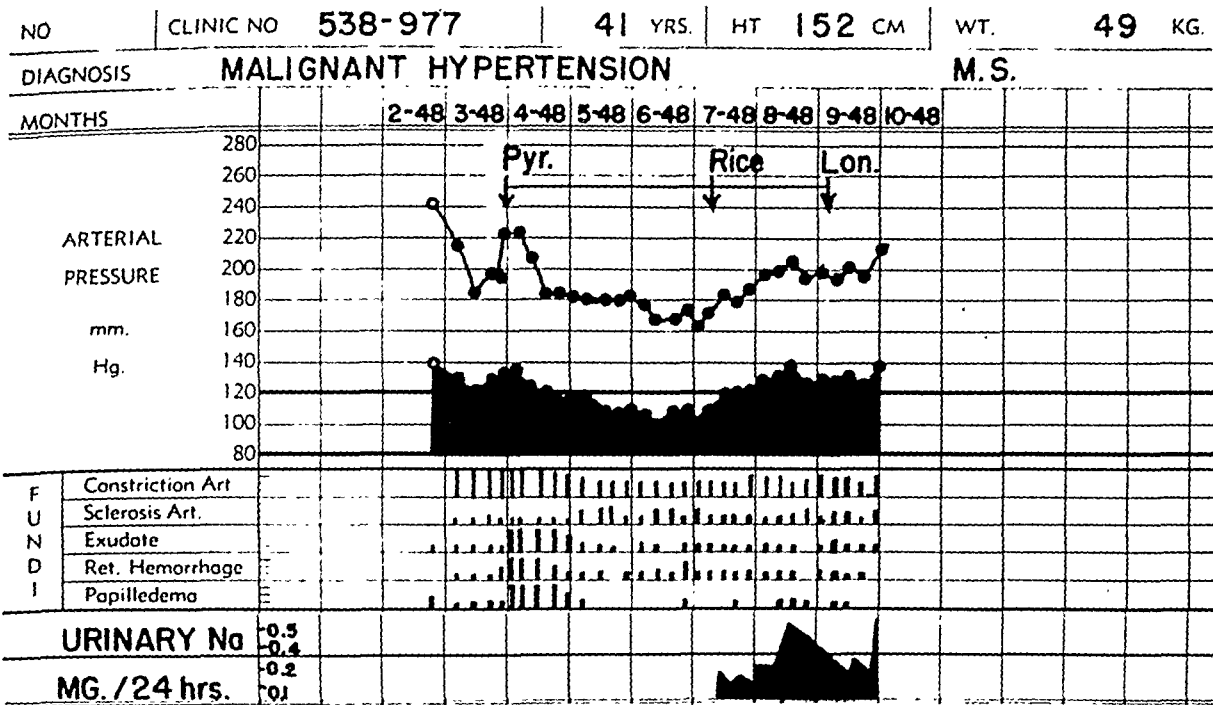


Figure 1.

kicked around at that time and then put on the shelf until the early part of 1940 when it was revived. At the present time it is a very useful means of arresting the progress of this disease. As Dr. Page has indicated to you, low sodium diets were first suggested around the turn of the century. It is difficult to know why we as medical people are so slow to recognize such useful procedures.

We have learned several things from the treatment of patients with low sodium diet. First of all it is extremely difficult to accomplish adequate restriction of sodium. Drs. Landowne and Alving of Chicago found it almost impossible to give an effective low-sodium diet to an ambulatory patient. Sodium, like bacteria and the poor, seems to be omnipresent. Further, it is very difficult to give a patient an edible diet that he can follow while carrying on normal activities, and yet restrict his intake of sodium to a degree sufficient to have any effect upon his blood pressure. Consequently, those patients we have studied have been in the hospital. Their intake of food has been carefully regulated by competent dietitians, so that it contains less than 200 mg. of sodium per twenty-four hours. As a further check we have measured the output of urinary sodium over twenty-four-hour periods.

Even honest and cooperative patients in good hospitals will come up on some days with a gram or two of sodium and the Lord Himself will not know whence it came. It may have been in toothpaste, mouth wash, drugs, or drinking water. We are quite convinced that it is difficult to attain a diet that will restrict sodium adequately.

In addition to these problems, there are relatively few patients who respond favorably as far as blood pressure is concerned. Probably at this time we are not justified in making a percentage estimate, but in the patients we have treated, who number some 50, less than 20 per cent have experienced a reduction of blood pressure or other objective improvement following such a program.

Too frequently the course is not unlike that of a patient whose course is illustrated in Figure 1. This patient had been treated previously with some experimental materials with which we have worked for some time. As you see, the blood pressure, systolic and diastolic, had dropped from control levels of 220/130 down to an average of 170/105. The retinopathy as represented by papilledema, hemorrhages, and exudate, had regressed until the hemorrhages were but intermittently present. The exudates disappeared. She was doing quite well.

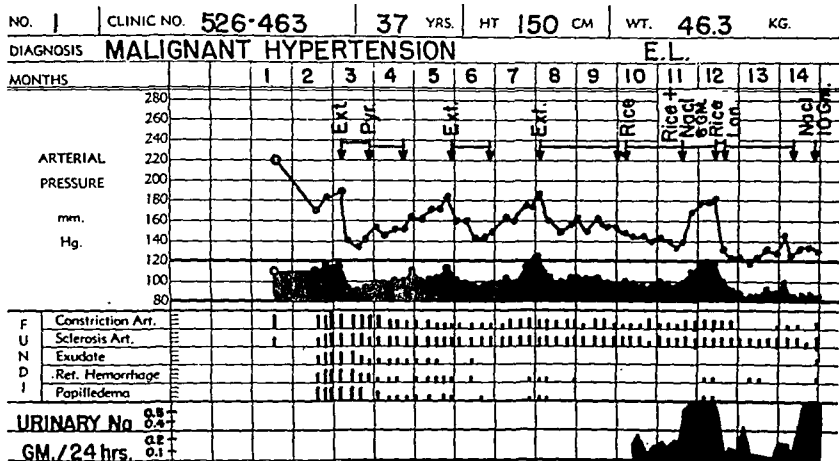


Figure 2.

Previous therapy was discontinued and her intake of sodium was restricted by giving her a diet which Dr. Kempner suggested, known as the "Rice Diet." Her urinary output of sodium was reduced to less than 200 mg. in twenty-four hours. During this time, a total of about two months, her blood pressure rose to and above its previous levels, papilledema returned, retinal hemorrhages were more frequently seen, and her disease progressed merrily.

At this point a diet which Dr. Page devised was instituted. It consists of a milk protein\* which is essentially free of sodium and of meats, fruits, and vegetables of low sodium content. On this schedule her urinary sodium continued to be in the neighborhood of 200 mg. per twenty-four hours. The blood pressure continued to rise and she went on to die of a cerebral hemorrhage. All patients fortunately do not respond in this manner. How are we going to select which patient is going to have a good result? We certainly do not know at the present time, except to try.

A rather different course is shown in Figure 2. This patient was a woman 37 years of age. She had been treated with various other materials up to this point. Her blood pressure by these means

had been reduced in the tenth month of her disease to an average of 140/95 to 150/100. Then we thought we would see what would happen to her as compared to the previous case. She was put on Dr. Page's diet, and instead of her blood pressure going up it continued to go down until it reached a level below 140 systolic. Next she was given a rice diet for a period of three weeks and the blood pressure fell further.

While the patient was eating rice, we added in tablet form 6 gm. of sodium chloride per twenty-four hours. Her blood pressure rose to 180 systolic and 120 diastolic. The sodium was discontinued, the rice diet was continued, and the blood pressure came on down. She soon could not tolerate the rice diet and was put on the Lonolac diet. Her blood pressure continued to stay down and her retinal disease was absent. We now gave her 10 gm. of sodium chloride a day; her urinary sodium came up, and for a period of three weeks no change in the blood pressure occurred. However, at present her pressure has started upwards.

FIGURE 3 illustrates a case of a woman who had an essential type of hypertension. The blood pressure varied rather widely over a period of a

\*Prepared by Mead, Johnson & Company.

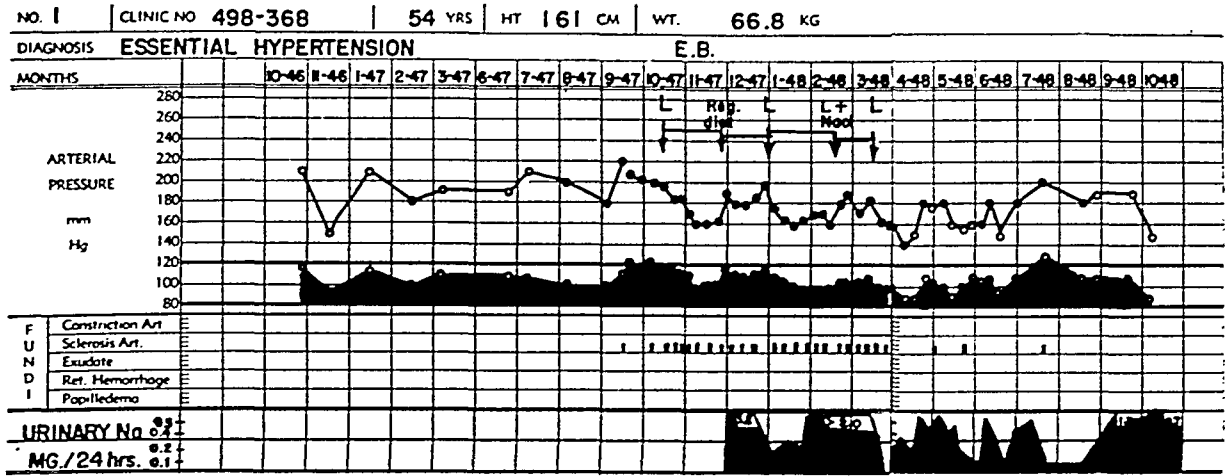


Figure 3.

year before she was treated. It occasionally was 150/90, but usually was up at hypertensive levels. The open dots represent outpatient measurement; the closed ones were taken in the hospital. She was given the low sodium diet, and her blood pressure was reduced to average 160/100. With the restitution of normal diet it promptly came up. The low sodium diet again was started—the blood pressure came down; with sodium chloride added it rose.

As you see, the level of urinary sodium parallels rather closely the height of her blood pressure. When the twenty-four-hour output of sodium is down her blood pressure is down.

Another patient had a favorable result following restriction of sodium. The blood pressure had averaged 180/120. It was reduced to 150/100.

In summary it seems safe to say that less than 20 per cent of patients with hypertension respond to diet low in sodium. Possibly more may do so if the diet is continued for years rather than months but as yet no one has studied such patients. It is very difficult to restrict adequately dietary sodium in ambulatory patients. At present there is no method short of trial which will tell which patient will respond to dietary measures.

YALE CLINIC SETS UP CONSULTANT SERVICE FOR INDUSTRY

A NEW consultant service to assist industry with the problems of alcoholism among workers has been set up by the Yale Plan Clinic, New Haven, Connecticut. All branches of the clinic, together with the National Committee for Education on Alcoholism, will cooperate in the consultant service, which this year will be limited to the area of the eastern states.

The major aim of the service will be to train specialists in industrial health, employees in personnel and employment departments, and company personnel dealing with discipline to a recognition of the problems of alcoholism and ways to control it.

Dr. George Lolli, medical director, and Raymond McCarthy, executive director of the clinic, are in charge of the industrial consultation, training and rehabilitation services.

## CASE REPORT

# Diagnosis and Treatment of Cystosarcoma Phyllodes

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THE METAMORPHOSIS of a fibroadenoma of the breast into a tumor which may attain gigantic proportions is rare. This paper is a brief discussion of these giant tumors, and includes what is believed to be the one hundred and twenty-sixth case report of this unusual and confusing clinical entity. The confusion may be more thoroughly appreciated when one is made aware of the fact—brought out by Owens and Adams<sup>1</sup> in 1941—that thirty different names had been employed in describing the 121 examples which had been reported up to that time.

A giant tumor of the breast was first described by Chelius<sup>2</sup> in 1828 as a "cystic hydatid." Ten years later, Johannes Muller<sup>3</sup> gave a detailed description under the name of "cystosarcoma phyllodes," which is still the term most commonly used to designate the lesion.

In order to understand cystosarcoma phyllodes, it is necessary that one first have a knowledge of the benign fibroadenomas of the breast. According to Geschickter<sup>4</sup> fibroadenomas are the most common benign tumors of the breast in young women in the childbearing period. He feels that benign cystic degeneration is not

uncommon, but that malignant changes are rare. It has been shown by Oliver and Major<sup>5</sup> that the age incidence in benign fibroadenomas was highest between 20 and 24 years in white women, but that it was almost five years earlier for colored women. Geschickter<sup>4</sup> has experimentally produced fibroadenomas in the breasts of rats by providing a constant, intense estrogenic stimulation. We now know that there is a low estrogen content present in girls prior to the onset of menses, which becomes cyclic or variable during their menstrual life. There are, however, occasions when this estrogen factor increases and remains at that higher level, namely, during early adolescence, during pregnancy, and during the onset of the menopause. At the latter period this increase seems to appear as a final, intense stimulation before dying down. It has been observed clinically that fibroadenomas of the breast tend to occur, or, if already formed, to increase markedly in size, during these three periods. It is in this rapid growth of a preexisting lesion occurring at the menopause that we are particularly interested. In some instances metaplasia may take place and sarcoma changes ensue.

Cystosarcoma phyllodes is a giant tumor of the breast thought to arise from a preexisting fibroadenoma, and is usually seen about the

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time of the menopause. The average age when these occur, according to Lee and Pack,<sup>7</sup> is at about 45½ years. The lesion is most often seen in women who have given birth to several children, but it may occur in unmarried females or even in males.

The history frequently reveals that a small, hard, discrete tumor of the breast had been present for several years, and that it rapidly increased in size. Pain is not present as a rule. The only complaint is apt to be discomfort arising from the immense proportions and dragging weight of the breast. Good health is maintained and constitutional symptoms are minimal.

Examination of the breast reveals it to be tremendously enlarged, firm, and lobular. Usually neither the nipple nor the underlying skin are invaded. Palpation of axillary lymph nodes may be difficult or impossible, for as a rule they are not primarily involved. Microscopically, the predominating tissue is composed of myxomatous stroma, with an inter-

lacing meshwork of star-shaped cells and fibers.

In 1931 Lee and Pack<sup>7</sup> reviewed 105 such cases reported in the literature, adding 4 new ones of their own. Owens and Adams<sup>1</sup> reviewed the literature from 1931 to 1941 and presented 12 collected cases to which they added one of their own. To this group of 122 cases reported in the literature, Cooper and Ackerman<sup>5</sup> reported 3 more in 1943, making a total of 125 cases.

#### CASE REPORT

A 40-year-old colored female was hospitalized on September 24, 1939, for a tremendous enlargement of the left breast, which had become so big and heavy that it was necessary for her to wear a sling around her neck to aid in the support of this tremendous breast. It was primarily the fact that the sling had rubbed a raw area on the back of her neck that made the patient seek medical attention rather than enlargement of the breast.

The patient stated that she had noticed a lump in her breast eleven years prior to admission. At no time had there been any pain in the breast. When originally noticed, the mass in the breast was described as about the size of an orange. It remained about the same size until two years prior to admission, when it began to get progressively larger. The patient repeatedly stated that her only complaint was the tender sore area on the back of her neck and that the breast at no time caused her any pain. There was a history of dyspnea on exertion. Changes in the menstrual cycle had taken place, indicating the onset of the menopause. The patient had had four children whose ages ranged from 12 to 20 years.

THE physical examination revealed her to be moderately obese, and apparently in excellent health, aside from the tremendous enlargement of the left breast and the ulceration on the back of her neck. The blood pressure was 230/138, and it was noted that a rather soft blow could be heard along the left border

of the sternum. Examination of the breast on the right side revealed no nodules nor tenderness, nor was there any evidence of pathologic changes.

Examination of the left breast revealed it to be 30 by 15 by 20 cm. and 75 cm. in circumference. The skin appeared tight and shiny. The areola and nipple were stretched into a flat sheet, but without retraction. The skin did not seem to be attached to the underlying tumor. On palpation there was an irregular nodular structure which had the feel of a bag of oranges. The lobulated masses were moderately firm. No glands were palpated in the axilla. A simple mastectomy was performed on September 27, 1939. The specimen weighed 7,830 gm. (17.2 pounds). The wound healed nicely, and her course in the hospital was uneventful. Figure 1 shows a preoperative picture of the patient, in which the tremendous enlargement of the breast is easily seen.

Figures 2 and 3 are low- and high-power photomicrographs taken from the specimen. Microscopically, the tumor is composed of a large amount of myxomatous tissue, with widely separated cells. The cells are fusiform and stellate, the long streams of eosinophilic cytoplasm in some cases being continuous with that of an adjacent cell. The nuclei are fusiform for the most part, with a finely granular nucleoplasm and no apparent nucleolus. No mitotic figures are seen in these pictures. There is a heavier concentration of these benign-appearing fibrocytes about the blood vessel, and a few ducts have been incorporated in the tumor. The epithelial element has not been affected by the stromal changes.



Figure 1. Photograph illustrating a tremendous enlargement of the left breast: *Cystosarcoma Phylloides*.

DURING the year following the operation the woman was seen approximately once a month. During the next three years she was visited on several occasions, the last time being October 1943. At this time, four years following operation, she still appeared to be in good health without any evidence of local recurrence or any symptoms of bone or pulmonary involvement. Because of the war further visits to the patient



Figure 2. Photomicrograph x 70. This shows the orderly, innocent appearance of the cellular structure. The tissue was taken from the tumor shown in Figure 1: Cystosarcoma Phyllodes.

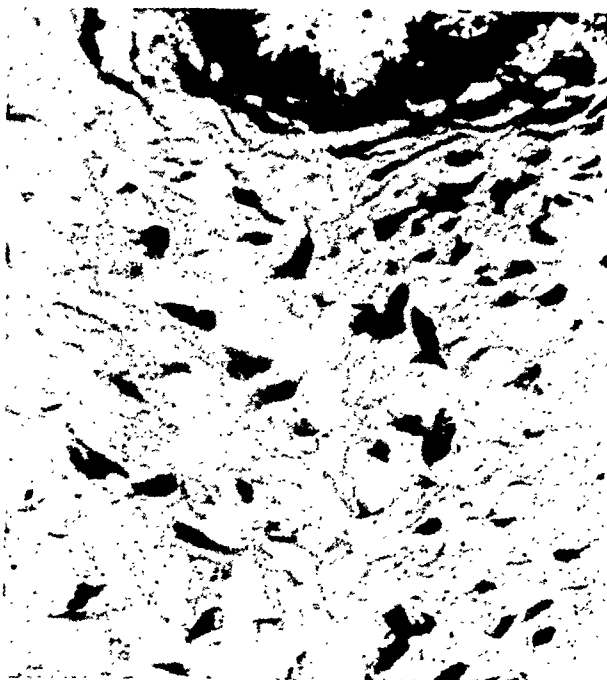


Figure 3. Photomicrograph x 395. An enlargement of a small field of Figure 2 reveals the absence of mitosis, equality of staining, and uniformity of cellular elements: Cystosarcoma Phyllodes.

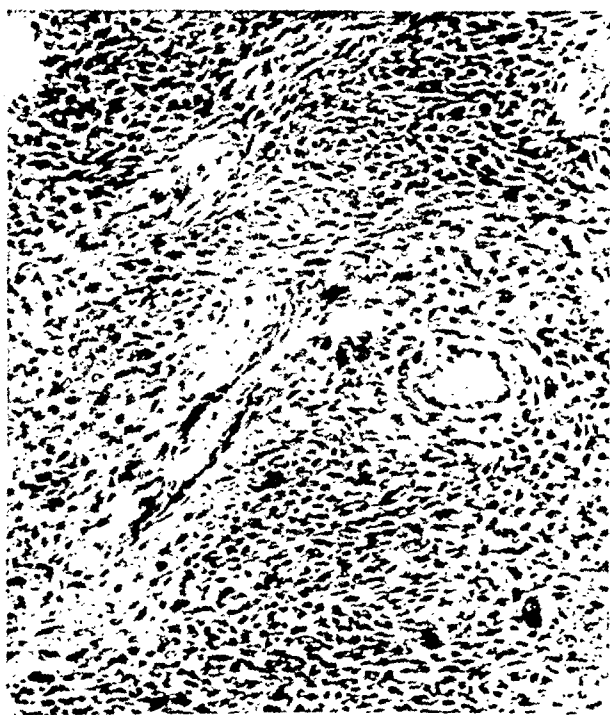


Figure 4. Photomicrograph x 140. This is a section taken from a true sarcoma of the breast for the purpose of contrasting it with Figure 2. A disorderly malignant appearance prevails: Sarcoma of the breast.

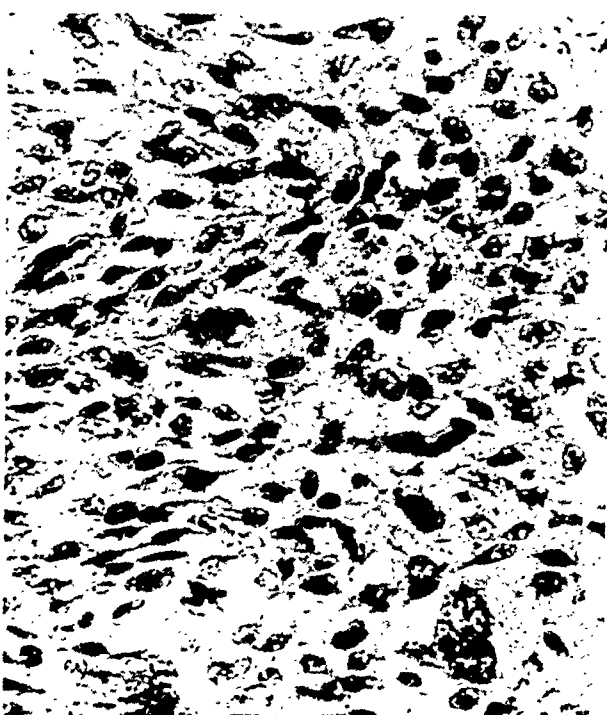


Figure 5. Photomicrograph x 395. This is an enlargement of a small field of Figure 4. Mitotic figures, variability of staining, giant cells, and an overcrowding of cells predominate the picture: Sarcoma of the breast.

*Figures 2-5, Courtesy A.I.P.*

caused an increase in the size of the lesion until she finally noticed its presence. Later, the increased, constant, estrogen stimulation during the premenopausal period possibly caused the tremendous growth of the lesion.

For the sake of comparison, Figures 4 and 5 represent the low- and high-power photomicrographs taken from the breast of a patient suffering with a true sarcoma. Microscopically, this tissue is variable, with large areas of scattered cells and foci of closely packed cells which lie in a transparent, homogeneous myxomatous material showing a meshwork of fibrous tissue. There is great variation in the size and shape of the cells, some being small and round, others being larger and elongated. Scattered giant cells contain 3 to 5 dark irregular nuclei, and there are numerous mitotic figures throughout. The individual cell contains large irregularly shaped pyknotic nuclei, and one or more small round nucleoli. The cytoplasm, where seen, is eosinophilic, but where the cells are spaced in the myxomatous material, the cell outline either is indistinct or is not visible. It is hoped that when comparing Figures 1 and 2 with Figures 3 and 4 that the benign appearance of this cystosarcoma phyllodes becomes apparent.

About the same time that Lee and Pack<sup>7</sup> had collected 109 cases of cystosarcoma phyllodes, D'Aunoy, Rigney, and Wright<sup>9</sup> reported 514 cases of true sarcoma of the breast collected from the literature. The frequency of occur-

rence seems to be about 1 cystosarcoma phyllodes for every 5 true sarcomas of the breast. In resuming their findings, they stated that the average age was 44 years. They may occur in males and unmarried females. There is rapid growth, large size, maintenance of relatively good health, and little involvement of lymph nodes. The only difference in the history is that the rapid growth period is measured in weeks for true sarcomas and in months or years for cystosarcoma phyllodes.

Cooper and Ackerman<sup>8</sup> state that cystosarcoma phyllodes, like all neoplasms, varies in potentiality from a very benign to a very malignant type of tumor. It is felt that in general the prognosis is relatively good, because the lesion is usually benign. However, it may undergo metaplasia and even metastasize to the lungs and bones, or may recur locally following its removal. Ewing<sup>10</sup> says that the tumor may perforate the skin with a resultant false appearance of malignancy.

The treatment of choice is simple mastectomy without axillary dissection. Slaughter and Peterson<sup>11</sup> in a recent article on the indications for doing a simple mastectomy specify cystosarcoma phyllodes as one of the lesions to be treated by this definite but limited therapeutic measure. The teaching of Bloodgood<sup>12</sup>—that in general a simple mastectomy is too radical a procedure for a benign breast lesion and yet too inadequate for malignant tumors—is a good rule of thumb. However, the treatment of cystosarcoma phyllodes by simple mastectomy would appear to be a justifiable exception.

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# When Shall Ovaries Be Removed?

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THE purpose of this paper is twofold: (1) To tabulate the incidence of various diseases of the ovary, and (2) to demonstrate the high percentage of ovaries removed having no pathologic lesion.

A summary of the lesions observed in 472 ovaries is shown in Figure 1. By far the commonest disease of this organ is ectopic endometriosis. My criteria for the diagnosis of endometriosis is the presence of both endometrial glands and stroma either on the surface or in the substance of the ovary. Many sections with prolonged study are often required to demonstrate both of these features. Solitary cystomas are simply large follicular type monoloculated cysts having a diameter of greater than four centimeters. Two cases of Meigs' syndrome were encountered in this series, one associated with a fibroma and the second with bilateral serous cystadenocarcinoma.

The first series of ovaries studied were removed during the years 1939 to 1942 inclusive and consisted of 1,181 cases. The operations were performed in five private hospitals and in one county hospital. Four of the private hospitals are located in small towns of less than 25,000 population while the fifth is a large general hospital in a city which has a population of 125,000.

In the large private general hospital series only 28.1 per cent of the ovaries removed showed a pathologic lesion. The four smaller private hospitals were lumped together for statistical purposes and here the percentage of ovaries with lesions was only 29.4 per cent. At the county hospital where there could not possibly be any element of remuneration 54.1 per cent presented a lesion. Figure 2 shows a tabulation of these statistics.

In classifying ovaries with no pathologic lesion

the following criteria were used:

(1) All ovaries removed because of primary malignant disease in the cervix, uterus, or fallopian tubes were not counted.

(2) All ovaries from individuals over 60 years of age with no lesion were disregarded.

(3) Follicle and corpus luteum cysts less than 4 cm. in diameter were considered as normal.

(4) Corpora hemorrhagica, lutei, and albicantes are normal physiologic processes and were so regarded.

The commonest preoperative diagnoses in the normal group were appendicitis, cystic ovaries, endometriosis, ovarian hyperfunction, painful ovary, and pelvic inflammatory disease. The commonest postoperative diagnoses were cystic ovaries, oophoritis, and ovarian hyperfunction.

Because of the high percentage of ovaries removed showing no pathologic lesion I decided to attempt to determine the reason for this and then take any steps I could to reverse these statistics. After numerous consultations with the physicians performing the surgery it became apparent that the main reason for the removal of a normal ovary was the failure of the surgeon to be able to distinguish from a gross pathologic standpoint the normal functional physiologic changes in an ovary from true lesions. Many of these men had interpreted simple follicle cysts, corpus luteum cysts, hemorrhagic follicles and corpora lutei seen at the operating table as pathologic lesions. These, of course, are normal physiologic changes which do not justify surgery. They are usually symptomless and only the most conservative operation is justified. The ovary is an organ with complex functions so that even if it is causing trouble in one direction it may be still more

## SUMMARY OF PATHOLOGIC LESIONS

<i>Lesion</i>	<i>No. of Cases</i>	<i>Per Cent</i>
Ectopic endometriosis.....	132	27.9
Solitary cystoma.....	96	20.3
Dermoid cyst.....	49	10.3
Infection and abscess.....	45	9.5
Multilocular serous cystadenoma.....	41	8.6
Multilocular pseudomucinous cystadenoma.....	28	5.9
Cystadenoma with carcinoma.....	19	4.0
Fibroma.....	15	3.1
Infarction.....	11	2.3
Primary carcinoma other than from cystadenoma.....	9	1.9
Metastatic carcinoma to ovary.....	6	1.2
Tuberculous oophoritis.....	4	0.8
Granulosa cell tumor.....	4	0.8
Theca cell tumor.....	3	0.6
Dysgerminoma.....	3	0.6
Mixed theca and granulosa cell tumor.....	2	0.4
Brenner cell tumor.....	2	0.4
Teratoma.....	2	0.4
Seminoma.....	1	0.2
Ovarian pregnancy.....	1	0.2
Plexiform angioma.....	1	0.2
Total	472	

Figure 1

important in another and its removal may make the patient's final condition worse than the first.

From the standpoint of a surgical pathologist the ovary is the most surgically mistreated organ of the body. It is a mystery to me why surgeons should regard with such indifference the castration of the human female. If the male testicle were attacked with the same impunity our courts would be overflowing with law suits. Cystic ovaries have too long been considered a cause of such vague complaints as abdominal pain, menstrual disorders, neuropsychiatric states, with removal justified for these diagnoses. This is indeed a fallacious assumption. Pathologists should refrain from diagnosing such things as multiple follicle cysts, corpus luteum cysts, retention cysts, perioophoritis, ovarian hematomas, fibrotic ovaries, and interstitial ovarian fibrosis because they appease the conscience of the operator but do not justify the surgery. Most surgeons have a blind faith in the infallibility of pathology and when they see these terms under the diagnosis they accept these as pathologic and cut.

There is one difficulty and that is that the micro-

scope does not reveal function and therefore all problems must be settled by coordinated study between surgeons, endocrinologists, and pathologists. Pain is one of the most common causes or excuses for attacking the ovary. Aside from lesions which irritate or stretch the peritoneum I do not know of a single ovarian lesion constantly accompanied by pain which is permanently relieved by removal of the ovary. True, some of the physiologic processes of the ovary are regularly attended with pain such as the midcycle pain from the rupturing follicle but who would advocate oophorectomy for this? Cranial operations for the relief of simple headache would be just as sensible. Many surgeons have had the experience of seeing a polycystic ovary at operation and after leaving it alone the pain ceases. The disturbance was obviously physiologic and the polycystic state of the ovary had nothing to do with the pain clinically observed. Ovaries showing every stage of physiologic anatomic development that have been erroneously interpreted as pathologic have been unmolested at surgery and the pain has ceased. Every pathologist in the course of routine autopsies

	<i>Before education 1939-1945</i>		<i>After education 1946</i>	
<b>Private Hospital No. 1</b>				
Total number ovaries removed.....	622		147	
Total with pathologic lesion .....	175	28.1%	97	66%
Total with no pathologic lesion.....	447	71.8%	50	34%
<b>Private Hospitals No. 2, 3, 4 and 5</b>				
Total number ovaries removed.....	485		162	
Total with pathologic lesion .....	143	29.4%	82	51%
Total with no pathologic lesion.....	342	70.5%	80	49%
<b>County Hospital</b>				
Total number ovaries removed.....	74		16	
Total with pathologic lesion .....	40	54.1%	14	90%
Total with no pathologic lesion.....	34	45.9%	2	10%

Figure 2

discovers all of these physiologic stages which have never caused the patient a single symptom.

In the performance of its predestined function the ovary is periodically forming cysts and one which does not show cysts is either aplastic or senile. Each maturing follicle forms a "cyst," and when ruptured a hemorrhagic "cyst" or "tumor" results, which in turn is followed by a "fibroma" or a "corpora albicans" with the end result of an "interstitial fibrosis" or "interstitial oophoritis."

There are essentially only two types of physiologic changes in the ovary, the cystic and the fibrotic. The cystic results either from the distention of a maturing follicle or from the rupture of this follicle with hemorrhage into the cyst. In most instances this is followed by a corpus luteum and finally fibrosis. Nature's way of terminating the menstrual cycle is by a generalized fibrosis. These deviations in anatomic structure are without association of a real pathologic process. When a surgeon sees these fruits of his labor displayed in a pathologic museum

he continues to attempt to relieve his patients of something that never caused them trouble in the first place.

It is my opinion that an ovary should never be removed unless it is truly pathologic or unless it is removed along with other organs in the attempt to cure a carcinoma. It is generally true that the younger a woman is the more severe the menopausal symptoms will be following castration. Nevertheless some of the most severe reactions are observed in women who had ceased menstruation.

This discussion plus a demonstration of the physiologic ovarian changes was presented at the staff meetings of the various hospitals concerned.

As can be seen from the statistics in Figure 2 the desired effect was forthcoming. Today the great bulk of ovaries removed in the hospitals I serve as surgical pathologist actually have a pathologic lesion. I am sure the same end result can be accomplished in any hospital merely by presentation of a similar demonstration prepared locally.

## Chronic Shock: The Problem of Reduced Blood Volume in the Chronically Ill Patient

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IT has long been recognized that the debilitated patient is a "poor risk" for extensive surgical procedures. More specifically, such patients have little or no tolerance for blood loss, heal their wounds slowly and suffer a generally protracted convalescence. Recent studies have shown that a reduced blood volume is a significant feature of the nutritional depletion of the chronically ill patient. Quantitative restoration of the blood volume by transfusions of whole blood effectively prepares the patient for an aggressive surgical program. A graphic summary of these observations is presented in the following charts and diagrams.

*Definition: Chronic shock is the syndrome of weight loss, reduced blood volume and increased interstitial fluid volume observed in the chronically ill patient.*

*Surgical Significance: Reduced tolerance for surgical blood loss, impaired wound healing, and protracted convalescence.*

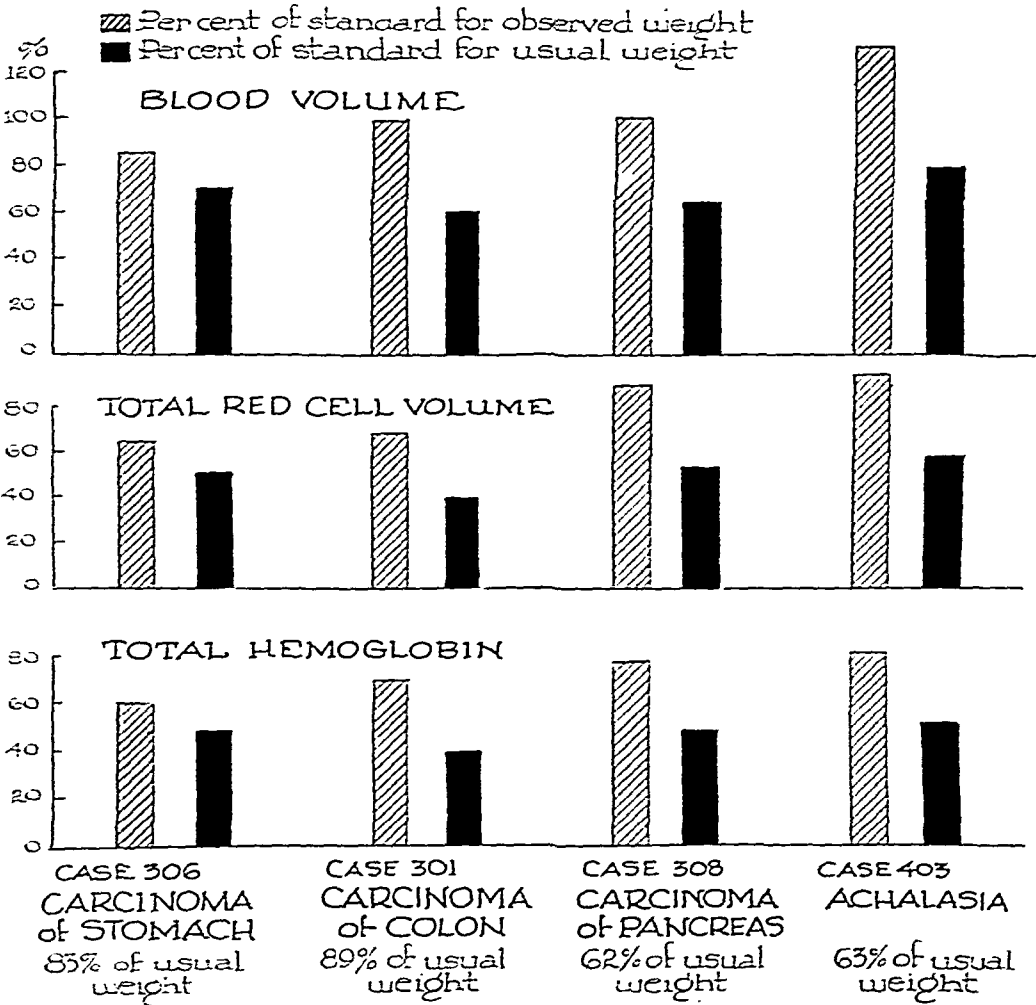
*Adapted from an exhibit awarded "Honorable Mention" by the American Medical Association.*

*This is publication No. 7 from a series of studies being conducted under a grant from the Research and Development Division, Office of the Surgeon General, United States Army.*

*Method of study* used in compiling data on 100 debilitated patients. Total blood volume has been determined by the plasma-dye-hematocrit method, using the blue dye T-1824. Total red cell volume, total circulating hemoglobin, and plasma protein were calculated from blood volume.

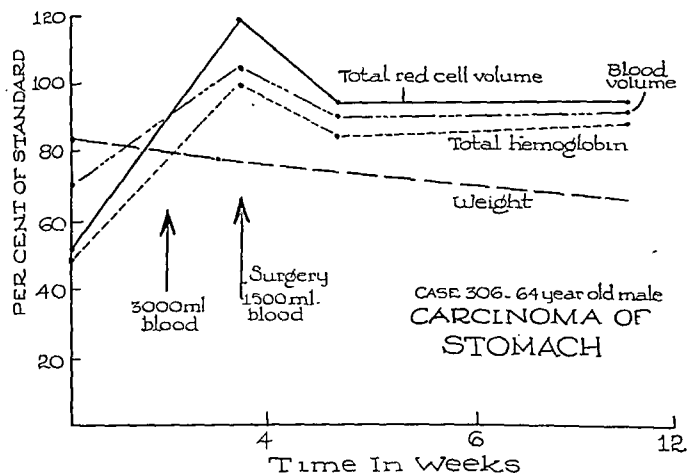
Calculations of deficits are made from following standard values:  
 Total blood volume..... 85 ml. per kg.  
 Plasma volume..... 45 ml. per kg.  
 Cell volume..... 40 ml. per kg.  
 Total circulating hemoglobin... 12.75 gm. per kg.

# CALCULATION OF STANDARD BLOOD VOLUMES



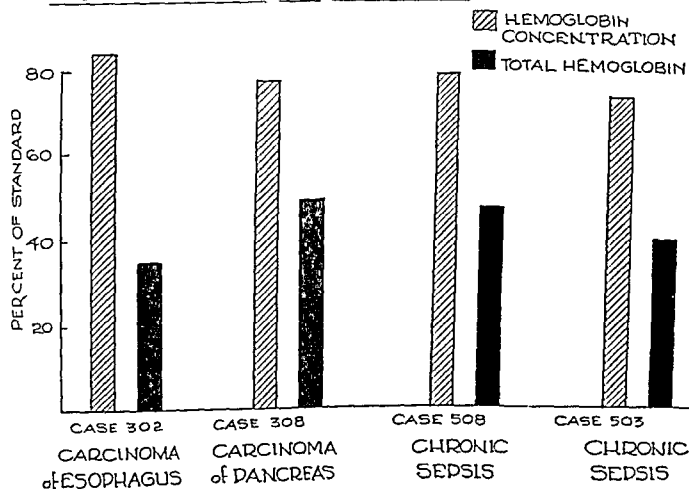
*The usual weight in health is used in calculating standard blood volumes and deficits. The blood volumes of patients with weight loss may be approximate standard values based on observed weights, but are distinctly below standard values based on usual weights in health.*

## BLOOD VOLUME and WEIGHT CHANGES DURING CONVALESCENCE



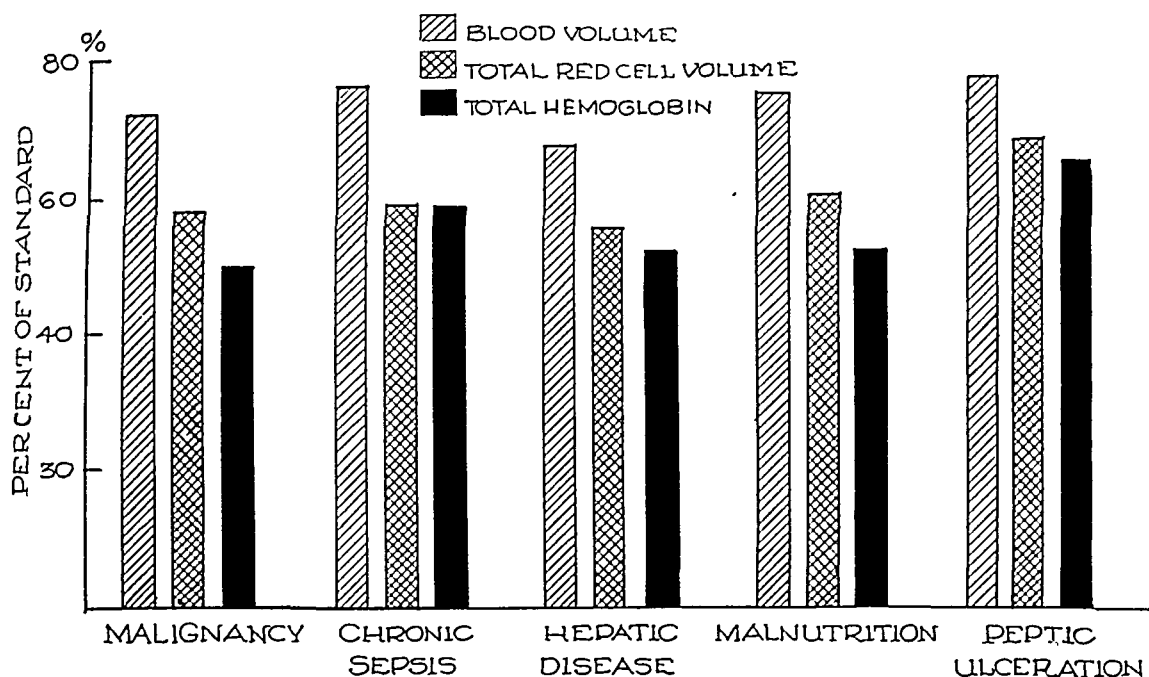
*Clinical finding supporting the calculation of standard blood volumes on basis of usual weight in health: (1) This level is maintained during convalescence after transfusion and appropriate surgical treatment. (2) Restoration of blood volume to standard values is accomplished without significant hemoconcentration.*

## ASSESSMENT OF ANEMIA



*Hemoglobin concentrations, red cell counts, and hematocrit percentages fail to reflect the true deficiency of total red blood cell mass apparent after blood volume determination.*

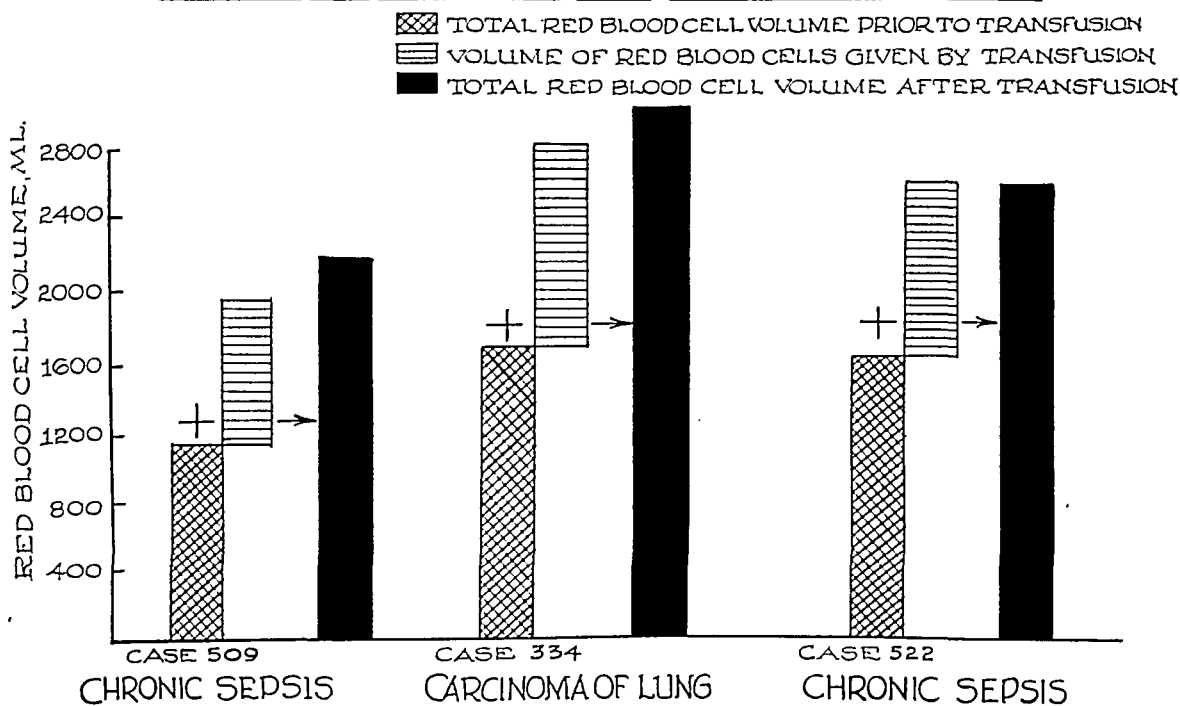
## FINDINGS IN CHRONIC SHOCK



*In chronic shock: (1) The total blood volume is low. (2) The total circulating red cell volume is low. (3) The total amount of circulating hemoglobin is low. There is no correlation between amount of weight lost and observed deficits.*

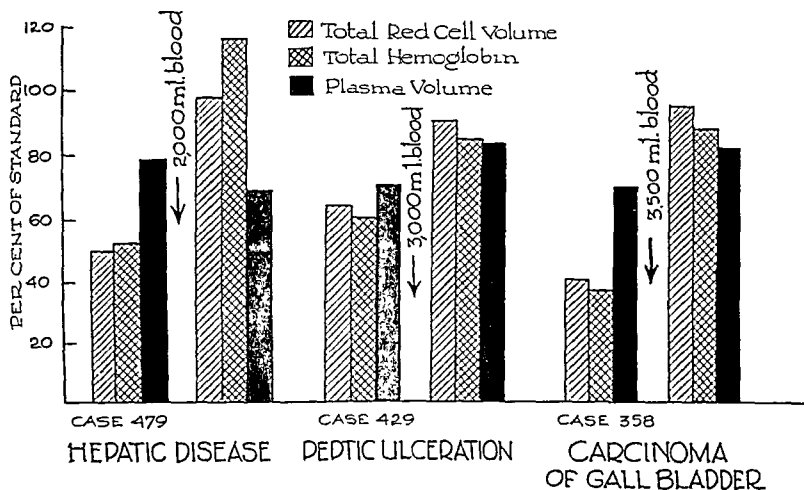
## DIRECT APPROACH TO THE PROBLEM —

### WHOLE BLOOD BY TRANSFUSION



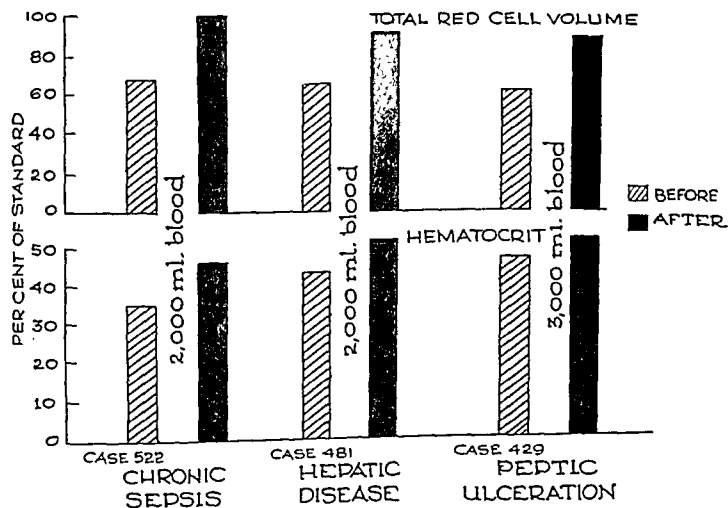
*In absence of continued bleeding, transfusion replacement of red blood cells is quantitatively effective.*

# RESPONSE TO TRANSFUSION THERAPY



The average quantity of blood required to restore the total red blood cell mass was 2,700 ml.

## RESTORATION WITH NO SIGNIFICANT HEMOCONCENTRATION



After restoration of total red cell volume to standard, the hematocrit seldom exceeds 50 per cent. Restoration of plasma volume occurs later during convalescence.

## ESOPHAGEAL STRICTURE

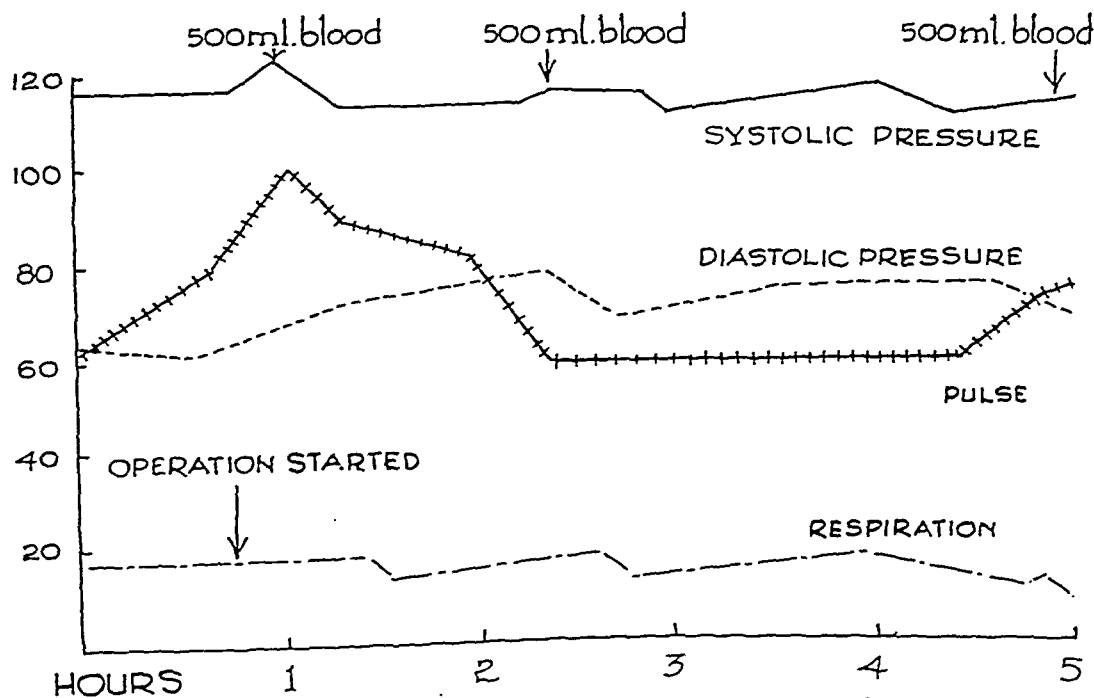
*Following esophagogastrectomy for malignancy (March, 1946), gastrostomy, July 5, 1946  
Rapid clinical recovery following dilation*

*Case 326—57-year-old male; usual weight, 220 lb.*

Date	Period	Weight (pounds)	Total Hemo- globin	Total Cell Volume	Blood Volume
			Percentage of Standard		
July 1, 1946	Preoperative; prior to transfusion	149	56	65	73
July 5, 1946	Preoperative; after transfusion of 2,500 ml. blood	Unchanged	113	118	126
July 17, 1946	Postoperative; high protein gastrostomy feeding	Unchanged	90	90	78
August 27, 1946	Postoperative; patient able to swallow high protein diet	161	100	102	98

*After effective transfusion therapy, restoration of depleted reservoirs of tissue protein is accomplished by feeding a complete diet.*

## IMPROVED TOLERANCE TO SURGERY



CASE 306. 64-year old male - Carcinoma of stomach

Restoration of total red cell volume to standard has prepared patients for all indicated surgical operations. Whole blood transfusions provide adequate and rapid preoperative preparation and insure a smooth operative course. Blood lost during operations is replaced concomitantly.

Anesthesia: Cyclopropane and ether by endotracheal technic.

Operation: Total gastrectomy and anterior gastroenterostomy for carcinoma with subtotal pancreatectomy, splenectomy, transverse colectomy, resection of greater omentum, and jejunostomy.

# The Medical Bookman

## PRACTICE OF ALLERGY\*

WARREN T. VAUGHAN's classic text on the Practice of Allergy has been published in a new edition revised by J. Harvey Black of Dallas, Texas. This second edition was in preparation at the time of Dr. Vaughan's untimely death in 1944. As the readers of the original edition will recall, the book had a flavor unusual in medical volumes. It made fascinating reading for physicians in all specialties and the second edition seems to have lost none of the interest and flavor of the earlier work. Dr. Black has been wise in retaining most of Vaughan's phrasing and attack. The text has been altered, however, whenever new developments in the field required it.

The volume is notable in several respects. A thirty-six page bibliography includes most of the articles of real importance in the field. The controversial subjects of bacterial allergy and focal infection are masterfully handled, the controversies adequately presented, the various points of view in the literature well covered, and the author's own views with reasons therefor clearly stated.

The section describing the part which fungi play in allergy covers sixty pages and is beautifully illustrated by photograph and sketch. In addition to the discussion of respiratory allergy to these agents, a chapter on fungus infection of the skin with associated allergy has been rewritten by Dr. J. B. Howell of Dallas, Texas, and represents the present thinking of the dermatologist and the allergist.

Allergy to insects and their products, called in this text *Entomogenous Allergy*, is briefly but interestingly covered, the various reports in the literature dealing with sensitization to bed bugs, mosquitoes, fleas, house fly, butterfly, caddis fly, and other insects being reviewed.

Most of the drugs capable of acting as allergens are listed in the section on drug allergy. A short section descriptive of the manifestations usually produced by each drug is included. One wishes that more space were given to the treatment of drug allergy by desensitization in those instances

in which this measure is required. The subject is covered in the text by the following statement, "The same general principle is followed as in all other desensitization processes, namely, gradual increases from an original minute dose." On the whole, however, the text throughout is most thorough and complete, each section including discussion of all related factors.

Despite this completeness the reviewer notes certain omissions. Relatively little mention is made of the relationship of allergic symptoms to the physiology of the autonomic nervous system. It is apparent in the study of any allergic patient that there is a very close interplay between allergic symptoms and the patient's emotional state. Several psychiatrists have commented at length upon the characteristic personality background or traits of persons suffering from allergic manifestations.

Since the work of Dale and Lewis of England, it has become increasingly apparent that histamine or some closely related substances such as acetylcholine are the substances liberated at the site of allergic reaction. The liberation at these sites then produces the phenomena characteristic of these drugs, that is, capillary permeability, capillary dilatation, and edema. For some years it has also been recognized from the work of Dale and others that acetylcholine is the substance which when liberated at the end organs of parasympathetic nerves, produces the parasympathetic response. It appears then that the same or similar chemical substances can be liberated in tissue by two means. It would seem reasonable then that adding histamine-like substances from a parasympathetic nerve response to the histamine already formed at a given site from the allergic reaction will push the histamine reactivity above the threshold necessary for the production of physiologic alterations in that tissue and thereby give rise to the allergic manifestations.

The text also fails to bring out a point which the reviewer holds essential: that the diagnosis of the allergic state be precisely made before the difficult, time-consuming job of detecting allergens is instituted. Searching for allergens in a non-allergic patient is no more reasonable than starting deep

\*Practice of Allergy. By Warren T. Vaughan, M.D., and J. Harvey Black, M.D. 2nd Edition, 1132 pages, illustrated. 1948, C. V. Mosby Company, St. Louis. Price \$15.00.

CHOCOLATE. COCOA.—*Theobroma cacao*

Chocolate is a contribution from the New World, Mexico, the West Indies, and elsewhere. It is now grown also in British West Africa, Brazil, Ecuador, San Domingo and Venezuela. Cortez first knew of cocoa when he was treated to the drink from gold cups in the palace of the Aztec Emperor, Montezuma. The Spaniards carried cocoa back to Spain. They kept its secret for many years, selling it at a high price, as chocolate to the wealthy classes in Europe.

The word cocoa is a corruption of the Spanish cacao which is in turn an adaptation of the Indian Cacaatl. The Mexican Indian also used the term chocolatl. As early as 1550 chocolate factories were scattered through southern Europe. The first factory in America was established in 1765.

The cocoa tree grows from 16 to 30 feet in height. The pods are large, from 6 to 12 inches long and from 2 to 5 inches in diameter. The cocoa bean, about the size and shape of a kidney bean, is protected by many layers, from inward outward, the bean shell, slime tissue, a soft inner shell and the hard almost woody outer shell of the pod.

The roasting of the bean adds flavor. It is put through several processes before it emerges as a thick oily liquid which is run into molds and allowed to cool. This is the common bitter chocolate. In sweet chocolate cocoa butter and sugar are added. Milk chocolate contains, in addition, a condensed milk or milk powder. As stated under soy bean it may contain soy bean milk and oil.

Cocoa, *Theobroma cacao* or breakfast cocoa, is derived from the same bean but has more of the cocoa butter or oil removed.

Cocoa butter is used in confectionery, especially in chocolate covered candies, in the drug trade and in the manufacture of toilet preparations and cosmetics. It is especially appropriate for some of these uses since it melts at about body temperature. It does not turn rancid.

A boy with dermatosis, allergic to chocolate, who had never had asthma, developed bronchopneumonia. During convalescence he ate chocolate. His cough persisted for three or four weeks. The blood showed 12 per cent eosinophilia.

Chocolate was then eliminated from the diet after which the cough promptly disappeared and the eosinophilia dropped to 4 per cent. I have seen cases of dermatitis from cocoa butter applied locally, in persons who were atopic to chocolate.

*Example of manner in which description of foods is covered.*

x-ray therapy for carcinoma before the diagnosis of carcinoma has been established. The text further allows a misconception common to American physicians to be preserved. This misconception is that the diagnosis of the allergic state is made by applying skin tests. It is a surprisingly common and a completely false belief that by the application of skin tests one may learn whether or not the symptoms of which the patient complains are allergic in origin. One finds frequently that people who have never in their lives had allergic manifestations will show several positive skin tests, and it is conversely not infrequent that patients suffering from frankly allergic symptoms will give completely negative skin reactions. The skin test is a tool in the armamentarium of the physician, giving him clues as to which substances may be weighted more heavily and which substances may be regarded more lightly in patients in whom the diagnosis of the allergic state has been positively made by other means. Despite the failure of de-emphasis of skin testing, the text does discuss the failure of the skin test method and the various possible reasons therefore.

Another omission apparent to the reviewer is the relatively brief discussion of sensitization to oils and fat. This omission is probably due to the lack of knowledge of and to the dearth of litera-

ture on this subject. It is frequently and sometimes embarrassingly apparent, however, to those studying this field that tissues do become sensitized to substances of this class. One would have enjoyed having this relatively dark corner of the subject of allergy illuminated. However, to the reviewer's knowledge the subject has not been studied sufficiently to allow fuller discussion.

Another subject which is but briefly mentioned is cardiac asthma. Among patients with cardiac decompensation it is not infrequent to see patients whose dyspnea is due obviously to narrowing of the bronchial airways rather than to pulmonary edema or to diminished oxygen and increased carbon dioxide tension. Among these people one occasionally finds those patients in whom specific agents effect allergic responses, the exhibition of these increasing or their removal decreasing such symptoms. More frequently, however, one is totally unable to find any allergenic factors operating. It is suspected that some reflex mechanism precipitated by the physiology of cardiac failure may be operative in these patients producing bronchial edema, hypersecretion of bronchial mucous glands, or constriction of the bronchial musculature. However, one searches the literature for adequate discussion of this subject without avail.

Turning to consideration of the various sections,

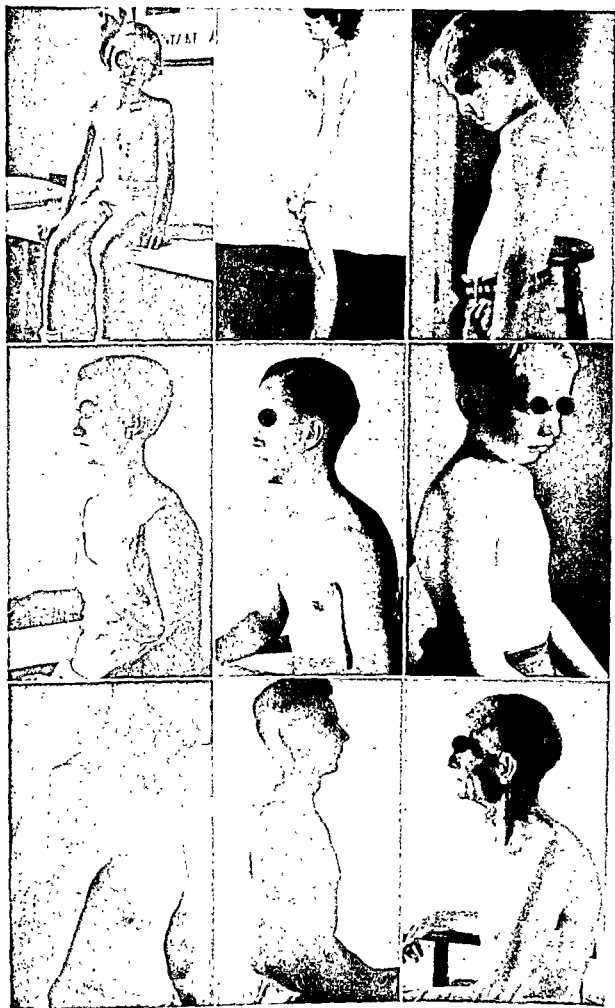


Figure 304. Types of chest deformity associated with asthma.

First row: Flat chest with tendency to pigeon breast, seen especially frequently in the growing child. Generalized muscular asthenia is commonly present. Improvement in muscle tone, with graded exercises if necessary, often helps the general condition.

Second row: With beginning barrel chest, the clavicle becomes raised, appearing horizontal rather than dipping downward toward the sternum. Owing to the chest deformity and the allergic facies, depression of malar prominences, the first two figures of this row (not related) resemble each other to such an extent that they might be taken for brother and sister.

Third row: More pronounced emphysema with barrel chest and horizontal clavicles.

one finds that in discussion of the basic sciences as related to allergy, the authors have made romantic a study which for many is strictly pedantic. All of the concepts and theories which have been held by

other observers are entertainingly presented. The authors discuss their own theories making plain that they are theories and voicing the opinion that as more adequate concepts are derived out of bet-



Figure 333. The nervous or psychic factor in allergic responses. This patient's abdomen would balloon up, as is shown here, within three minutes after eating certain foods, especially orange juice, or after dipping the hand in ice water. Photograph was taken with the latter as the excitant. Breath holding or other obvious diaphragmatic manipulation did not accompany this response. The back is not arched. The ballooning persisted although the patient continued to breathe normally. Relief followed dipping the hand in hot water.

Abdominal distention is a frequent feature of gastrointestinal allergy. However in the above case the extreme degree and rapidity of response suggests a predominant psychic factor. The patient was not of the hysterical type. Allergic food avoidances have given relief through the two intervening years. Allergic therapy relieved, possibly through suggestion.

*Illustrations from: Vaughan-Blach, "Principles and Practice of Allergy."*

For experimental evidence these theories will then be replaced.

The sources of information regarding a patient's sensitization are thoroughly covered. Many help-

ful points are made in regard to history taking. It is brought out that the important points of the allergic's history can be arrived at only by intimate and painstaking discussion with the patient in re-

gard to how he lives, what he lives with, what his food habits are, what are the idiosyncrasies of all kinds which he has experienced. All of the methods of obtaining information from skin testing are carefully evaluated, including the method of passive transfer and the method of making mucous membrane tests. Patch testing is discussed together with the substances to which the method is applicable.

The chapter on the leukopenic index remains. This method was devised by Dr. Vaughan but is not at present widely used. It depends upon the depression of the total neutrophile count over one or two hours in a patient who has ingested a specific food immediately preceding the test. No discussion is made of the eosinophilic index, a method similar to the leukopenic index but depending upon the elevation of the total eosinophile count following such ingestion. Neither is mention made of Arthur Coca's contention that ingestion of an allergenic food will cause tachycardia. Coca feeds the patient a dish of a given food recording the pulse rate at frequent intervals during the course of the next two hours. If the pulse rate rises during this time Coca assumes that this represents evidence of sensitization. This method has never been accepted by American allergists but neither has the concept been refuted. The book includes a useful portion on methods of testing for physical allergy including cold testing, heat testing, actinic test-

ing, and trauma testing with a review of some of the observations made by various observers in regard to this subject.

The volume's essential core is the sections dealing with the diagnosis and treatment of food allergy and with the study of pollens and pollinosis. These chapters comprise about half the text and are the high points therein. No other English text covers these subjects comparably in either breadth or depth except perhaps Coca, Walzer and Thommen in their monograph published in 1931. All of the methods of detecting allergenic foods are adequately and interestingly discussed. The section on botanical description of the food plants, their origin, their occurrence and use in manufactured or prepared foods is exhaustive and the best available. Likewise the pollen section is just as thorough. Part of it is written by and the rest contains much material from the student who has done the greatest work in this field, O. C. Durham. One actually recognizes the grasses and plants from the excellent photographs made by the late Dr. Vaughan in person.

One concludes that, though flaws are apparent, this volume remains a classic in its field and has grown in stature with revision. It is unequivocally recommended alike for the casually interested and to the student of the subject. Each will find reward in plenty.

A. W.

## New Books Received

### ► GENERAL ENDOCRINOLOGY - - -

*By Donnell Turner, Ph.D., Associate Professor of Zoology, Northwestern University. 1st Edition. 604 pages with 164 figures. 1948, W. B. Saunders Company, Philadelphia and London. Price \$6.75.*

Even more than the title implies, this text discusses the subject of endocrinology from a broad didactic point of view. The author reveals an extraordinary ability to integrate the fundamental knowledge of this subject from the various biologic sciences and to transmit this information in an orderly and clear manner. The subject matter is approached from an experimental rather than from a clinical point of view. As the text is intended for students who are concentrating on experimental biology, the material is presented as a fundamental aspect of biologic science rather than as a

medical specialty. However, the author has chosen the human being wherever possible to illustrate the operation of biologic principles.

Aside from the unquestionable importance of this book to students of experimental biology, the book should be of value to medical students and graduate physicians who are interested in obtaining the broadest point of view in the study of endocrinology, and for those practicing physicians who desire a refreshing review of the basic knowledge in this field.

At. S.

## ► CLINICAL UROLOGY . . .

By L. E. McCrea, M.D. 2nd Edition, 503 pages, 263 illustrations. 1948, F. A. Davis and Company, Philadelphia. Price \$6.50.

According to the preface, this book is to aid in the determination of "what is it? what to do? and how to do it" in the form of a concise, practical treatise. It is intended for general practitioners, interns, and students, and is said to have been largely rewritten.

On the whole, it achieves its objectives, since it covers the field pretty completely and concisely, and is unusually well illustrated (the author is an enthusiastic amateur medical photographer). However, a book intended for the group mentioned above should certainly contain a few key references to the literature where there are grounds for differences of opinion. Unfortunately, this one does not. Better proof reading would have eliminated certain amusing inconsistencies, such as "impassable strictures are treated by internal urethrotomy . . ." (you just *can't* do it!), and "the infected prostate can and does not act as a focus of infection," to name just a couple.

Your reviewer also objects to devoting almost two pages to a classification of "Neurogenic Bladder," a poor but widely used term, while giving only a few lines to a fairly ambiguous discussion of treatment. One must

also criticize his recommendation of mercuric cyanide as an antiseptic (it ain't) for sterilizing catheters, and of a combination of prostigmine and Syntropan, which ought to counteract one another pretty completely, for postoperative retention of the urine.

Much of the book is much too dogmatic to be of maximum value, although this doubtless results from the desire to be brief. Thus "a stricture should never be cut if it is possible to pass a filiform through it," and "exposure of the tumor (in the bladder) should always be by the suprapubic route" need a good deal of qualification and discussion.

Even so, the book could be recommended to "students, interns, and general practitioners" were it not for the author's puffing up of the long discarded old superstition that sudden emptying of the chronically distended bladder is dangerous, and his recommendation that anuria from sulfonamides be treated by three to four thousand cubic centimeters of isotonic saline by vein each day. This is not good modern treatment because its use in an anuric patient is so likely to lead to edema and to cardiac failure.

C. D. C.

## ► PSYCHOSOMATIC DIAGNOSIS AND TREATMENT . . .

By Flanders Dunbar, M.D., with the assistance of Drs. Jacob Arlow, Raymond Hussey, Bertram Lewin, Robert C. Lowe, Sydney Rubin, E. Schneider, Lester W. Sontag, and members of the staff of the Department of Medicine and Psychiatry of Columbia-Presbyterian Medical Center, New York. 501 pages. 1948, C. V. Mosby Company, St. Louis. Price \$6.50.

Proceeding on the theory that there are psychophysiological interrelationships, not only in the visceral diseases, but also in the nervous and infectious diseases as well, the authors have applied certain "psychodynamic principles previously studied in visceral diseases to syndromes involving voluntary musculature

and reactions to reactions." They conclude that each type of disease syndrome is probably characterized by a specific type of personality profile and that, therefore, it is necessary to "study the whole organism," including history-taking as "a vital and integral part of the study of the personality profile."

## ► FRACTURES AND DISLOCATIONS . . .

By Edwin O. Geckeler, M.D., Philadelphia. 4th Edition, 371 pages. 1948, The Williams & Wilkins Company, Baltimore. Price \$5.00.

This edition, which was written for the general practitioner and the student, brings up to date the new developments in traumatic surgery since the third edition was written, including methods which developed out of experience gained in the recent war. Where there

is a choice of procedure in the management of various fractures, the author continues his earlier practice of recommending the method he considers the simplest and most reliable. Each section of the book is profusely illustrated.

# Men of Medicine

## THE CLASS WILL COME TO ORDER

**D**R. ERNEST SACHS, holder of this country's first professorship in neurologic surgery, is a plumpish, balding, straight-talking man whose ability to make the air in an operating room cyanotic is vividly recalled by former students from England to Argentine.

The great saving grace about this pioneer brain surgeon is that virtually all of his colleagues and many of his students realize his peppery, impatient, and outspoken qualities have been prompted through the years by a fierce devotion to basic principles.

In a specialty which requires profound concentration, Dr. Sachs has long been known for the demands he has made of himself and those around him in the provision of meticulous care for the patient. Always methodical, he has insisted that it is the duty of the surgeon himself to prepare his own operating field. Throughout the three decades since his professorship at Washington University in St. Louis was established, he has stoutly maintained that not alone the neurologist, but the neurologic surgeon must participate in a diagnosis if intelligent treatment is to be rendered.

Even those former students, who once in a while disrupted Sachs' celebrated weekly, Thursday noon diagnostic clinics by setting off alarm clocks, freely concede now that his stern attention to business produced deep-seated and lasting benefits. Of those clinics at the St. Louis medical school, Dr. Sachs is wont to say, in the words of Dr. William Osler, one of his own great teachers: "They were to train the powers of observation. Their purpose was to train the eye that sees not, the hand that feels not and the ear that hears not."

That his lessons, delivered in a strong voice which carries with the force of a foghorn, were effective is evidenced in the achievements of some of the students and fellows who worked under him. Among these are Drs. Alton Ochsner, Cobb Pilcher, Edward Fincher, J. Barrett Brown, Roland

M. Klemme and Henry G. Schwartz. The latter succeeded Dr. Sachs when he retired as chief of neurologic surgery at Washington University in July, 1946. Of the Sachs-trained fellows who have remained in surgery, not one has failed to be named chief of the specialty at his institution, including Oxford and the Universities of Liverpool and Argentina. Seven hold professorships.

Above all, Dr. Sachs counts himself a teacher. Seventy years old last January, his temper has become quiescent and his manner has mellowed. Yet he still can whip up a disturbance at the thought that, to his knowledge, not a single U.S. medical school includes the fundamentals of pedagogy in medicine in the material it gives its students.

Himself a product of a family noted for its achievements in education, he believes as he looks back upon his career that he strove always to avoid the old, stereotyped questions, to lead students to do their own thinking. Too often, he long has maintained, this principle has been cold-shouldered by instructors appointed only for their accomplishments in the laboratory and the operating room, without regard to their ability as teachers.

"You can't teach only by Hippocrates and the grace of God," he is prone to say. "The outstanding student doesn't need deft instruction, but the majority of students are not outstanding, they are average. A great deal can be done, I believe, to improve the character of teaching in our medical schools. Improve that and we will improve the quality of service rendered by the average practitioner."

As Ernest Sachs looks about at the prevailing scene in the field of neurologic surgery, he confesses that the sight leaves him somewhat incredulous. When he began, in the first two decades of the century, it was a lonely realm in which Harvey Cushing, Charles H. Frazier, Charles Elsberg and he were about the only figures.

Not until 1919, shortly before Sachs, Cushing



ERNEST SACHS

and others formed the Society of Neurological Surgeons, was the specialty fully created. "I often wonder how we got by," Dr. Sachs says in awed tones. "Even blood transfusions were troublesome. It was a rare sight to see a patient with a brain tumor. Before 1918, and Walter Dandy's discovery and development of ventriculography, our clinics thought they were doing splendidly if they localized 50 per cent of tumors. Finding young men willing to enter the field then was vastly more difficult than finding an adequate supply of nurses is now."

Today, he notes, hundreds of gifted, young students are streaming into neurologic surgery. Something is considered amiss if existing tumors are not successfully located in 97 per cent of the craniotomies performed.

Dr. Sachs spent his childhood and early manhood in his native New York. For a while, he confesses, he had a trying time because he attended the private school of which his father, the late Dr. Julius (Ph.D., not M.D.) Sachs was principal. "Have you ever been the principal's son?" the physician inquires ruefully, his direct gaze coming over his spectacles. The senior Sachs later was to be, for fifteen years, professor of secondary education at the Columbia University Teachers' College. There is now, at the college a scholarship endowment fund established by the surgeon's father and his mother, Rosa Sachs.

THE family lived on New York's West side, near the Museum of Natural History, but Dr. Sachs stoutly maintains its proximity had nothing to do with his early interest in science, biology and medicine. Always a plump youngster who insists he never was called "Fatty," he was ever the serious, studious type. His boyhood collections of rocks and butterflies were the bane of his mother's existence, but young Ernest, with the dogged application that was to be a permanent hallmark of his character, made weekly excursions into the countryside to add to his store of specimens.

When he was 7, he began taking cello lessons. "It was the fashion," he recalls a trifle wryly. Unlike most juvenile musicians, however, Ernest stuck to his cello. Later, at Harvard (where he was class of 1900), he was to organize a Haydn String Quartet; one of his fondest college memories is the occasion when the quartet gave its first concert at the dean's home, creating such interest

that Charles Eliot Norton was moved to attend.

Propelled by an early interest in surgery, he visited the Massachusetts General Hospital one day during his senior year, to see whether he could tolerate watching an operation. It was an especially gory amputation of the knee joint he viewed on that occasion, and he was compelled fully six times to dash out for air. Happily for neurosurgery, he never suffered this malaise after he got to medical school at Johns Hopkins in the autumn of 1900.

With characteristic enthusiasm, Dr. Sachs counts himself lucky to have had the teachers he did. It was the period of Osler, William S. Halsted and Arpad G. Gerster. To the latter, especially, Dr. Sachs credits his abounding love for the principles of postoperative care, and the notion that a man may be an excellent operator, yet still be woefully deficient in his knowledge of the many niceties of patient care.

When Dr. Sachs entered his period of internship at Mount Sinai Hospital in New York, his objective was general surgery. But his uncle, Dr. Bernard Sachs, who headed the neurology department at the hospital, began impressing on the young intern's consciousness the fact that there was an acute shortage of personnel in the virgin field of neurologic surgery. Everywhere the word was, "Brain tumors always die." In the profession, or more exactly, in a tiny segment of it, there was alert interest in the work of Harvey Cushing, just then beginning to apply to brain and spinal cord surgery the principles promulgated by Dr. Halsted for general surgery—delicate care of the tissues, control of hemorrhage, the use of the silk technic.

Sachs gave in. "I don't know," he says reflectively, "I suppose I went in for neurosurgery because it was a field everybody said was so 'hopeless.'" He performed his first brain operation at a New York nursing home. "It was a tough case," he recalls candidly, "and I don't think I was so damn calm."

Even then, he was convinced that sound neurosurgery demanded, first of all, a thoroughgoing knowledge of neurology. Without this, he reasoned, there never could be a neurosurgical specialty. He therefore spent about eight months studying neurology under Henry Oppenheim and Heinrich Obersteiner in Berlin and Vienna, and followed this with two years of study under England's Sir Victor Horsley. These three, and especially the latter, Sachs counts among his idols, but it is no uncritical idolatry. In later years Dr. Sachs was to



Photograph taken at the annual meeting of the Society of Neurological Surgeons, New York, about 1936. Seated, from left to right: Charles A. Elsberg, Charles H. Frazier, Howard Naffziger, Harvey Cushing, and Alfred S. Taylor. Standing, left to right: Byron Stookey, Wilder Penfield, Loyal Davis, Samuel Harvey, Kenneth G. McKenzie, Max M. Peet, Charles Bagley, H. H. Kerr, Carl W. Rand, Ernest Sachs, J. Jay Keegan, Jason Mixter, Charles E. Dowman, Francis C. Grant, and W. McK. Craig.

note disapprovingly that Oppenheim's day sanctioned separate, preliminary diagnosis by the medical man and then operation by the surgeon.

RESULTS in those days were so discouraging, and candidates for the field so few in number that Dr. Sachs has recalled that his first neurologic contact with Dr. Cushing in 1909 was in the form of a letter received while he was with Sir Victor. Dr. Halsted had just given permission for a resident, Dr. Cushing wrote wistfully, and would Dr. Sachs like to come home and take the job? Sachs regretfully had to turn down the offer because his work with Dr. Horsley was not yet finished.

A few years later, Dr. Sachs himself was to receive a note from Dr. Frazier suggesting that the former take on a promising young comer named M. M. Peet. "He was too promising," Dr. Sachs now exclaims. "He never came." As late as 1919, he was to hear again on the same subject from Dr. Cushing, who wrote to ask if Dr. Sachs knew of

any worthwhile potential assistants. In sum, even the neurosurgical topnotchers were scraping around at the bottom of the barrel.

When Dr. Sachs returned to New York from England in 1909, he hoped to enjoy a period of general surgical practice, but pressure in another direction was too strong. Very shortly thereafter, he was (as he puts it) "pushed" into neurosurgery; after stints in Montefiore, Beth Israel and Bellevue Hospitals, he joined the Washington University medical school faculty in 1911.

There, an old student remembers, he quickly established a custom he never forsook in the ensuing years, of accompanying students and fellows to brain cases in personal rounds he made at least once a week. He thought it a major offense then, to smoke in a patient's room, and he still does.

During those first years in St. Louis, a suspiciously high number of patients were reported by their physicians to be dying of "a stroke." The pudgy Sachs frame and full moustache began popping up at meetings of county medical societies in

Missouri and Illinois, as the surgeon started to beat the bushes in an effort to spread awareness of the symptoms of brain tumor. Dr. Sachs was a little tired of having everybody remember the Maine. He wanted more practitioners to remember the tumor.

ACTUALLY, the history of neurosurgery began in 1919. It was the year in which Dr. Will Mayo first introduced the term, "neurologic surgery," after Dr. Cushing had delivered a memorable address on brain tumor statistics before the American College of Surgeons. "Today, we have witnessed the birth of a new specialty," was Dr. Mayo's comment. It was the year, also, in which Dr. Sachs received his epoch-making professorship, now a commonplace in most universities.

Dr. Sachs, ridden by a deplorable weakness for not remembering faces but blessed with a remarkable memory for facts and a methodical way with old correspondence, has rich recollections of those first days of the Society of Neurological Surgeons.

At the initial meeting, Dr. Cushing was to operate on a brain tumor, Dr. Sachs recalls, but when the patient was wheeled in, he was spewing, coughing, and blue. After a period of watching, while the anesthetist, who had given ether, vainly tried to quiet the patient, Dr. Cushing suddenly said, "We won't operate. Any patient who behaves as he does won't stand operation."

The decision, a hard one to make, exerted a profound impression upon Dr. Sachs, who has stubbornly emphasized the precept to more than a generation of students that the patient comes first. Only one other violation of his code makes him come out of his corner with greater belligerency.

That is to find a surgeon, especially a neurologic surgeon, who gives up on a case, even the most desperate. The only progress recorded to date, he feels, has been achieved because somewhere along the line there were men willing to keep trying no matter how high the odds.

Dr. Cushing was the first president of the Society of Neurological Surgeons and Dr. Sachs its first secretary, a post he held for almost six years. Later, he too, became president, a post he also was to hold in 1943 with the American Neurological Association. He also is an honorary member of the Royal (British) Academy.

In an address delivered three years ago to the Surgeons, Dr. Sachs recalled that its first years

were filled with much technical correspondence and difference of opinion on matters which today provoke only unanimity. Dr. Sachs' early correspondence with his friend Cushing dealt with Gigli saws, different kinds of operative clips, a type of electric light bulb which Dr. Cushing had seen Dr. Sachs use on a headlight and could not get in Boston. Comments at the 1921 meeting were critical of ventricular punctures and the withdrawing of cerebrospinal fluid to reduce pressure. Dr. Cushing was worried about the possibility of serious accidents resulting from Dandy's procedure for injecting air into the brain to locate tumors.

Although Dr. Sachs did his own first air injection in 1918, shortly after Dr. Dandy had described the technic, he confesses it was almost a decade before he really got off the fence. Today, he regards this and the introduction of electrosurgical technic by Dr. Cushing in 1927 as the major signs of neurosurgery's coming of age.

Friends say the fact is that, progressive teacher though he may have been, Dr. Sachs tempered his enthusiasm with conservatism for the benefit of the patient. He has a stubborn passion for things that are tried and true. Though it remains the bane of his operating room assistants, he still sterilizes his hands with potassium permanganate and oxalic acid before operating.

Never one to shirk from objective self-analysis, Dr. Sachs candidly describes himself and many of the other pioneers of neurosurgery as "a bunch of prima donnas." In 1923, he and a number of the others temporarily fell into disrepute with the hard-working Dr. Cushing when they arrived at the society's annual dinner, mellowed by a cocktail session, only to have Dr. Cushing announce, soon after the meal: "Time to go, men. I've arranged a clinic for you at 8 o'clock, and the patients are all lined up."

"Nobody wanted to go," Dr. Sachs recollects with a sigh. "Looking particularly at the secretary—me—Dr. Cushing said angrily, 'Well, if you're going to make this an eating club, I'm going to get out.'" Next day, however, Cushing was affability himself, staged an impressive operative demonstration and even had a friendly word for the disgraced secretary.

Dr. Sachs, as he likes to put it himself, has been "guilty of" two books of considerable stature. The first, "Diagnosis and Treatment of Brain Tumors," was published in 1931 and became the first English language work detailing this field in comprehen-

sive fashion. He wrote it primarily with a view to helping the general practitioner recognize the presence of brain tumors and grow ever more aware of the old Sachs rallying cry, that brain tumors were not rare diseases.

His second book, "The Care of the Neurosurgical Patient," published only four years ago, summed up what Dr. Sachs has stood for: meticulous attention to detail.

Dedication of his first book, and a graceful tribute in the preface of the second one to his wife, Mary Koues Sachs, are more than a formal gesture from husband to spouse. In point of fact, some friends say, only those students lucky enough to get one of the invitations to the Sachs home and to see the surgeon in his home habitat got a good look at the real measure of the man, under the iron curtain of his pedagogic crispness.

They still call each other "Sweetheart," after thirty-six years of marriage.

Their close kinship serves to dispel any notion that Dr. Sachs may have a constitutional objection to the marriage institution when he says regretfully that distractions from duty inevitably ensue for the high proportion of today's interns who are married. "When I was young," he is wont to say sternly, "a man couldn't get a hospital place if he was married."

MARY SACHS is her husband's junior by four years, a slight, slender, white-haired, effervescent woman who writes prize-winning poetry and has been active in the League of Women Voters and other politically-conscious organizations. Friends call her "Maisie." She knows her own mind and, some say, has been unsuccessful until recent years in only one effort involving her husband; this was her steady campaign to make him professionally mellow. From the beginning of their union, she has been her husband's literary editor and critic. "She's always felt I needed one," Dr. Sachs sighs resignedly. "And she's so right."

Save only for patient's names, she has shared Dr. Sachs' complex cases with him. With startling ease, she can explain the significance of his contribution in 1946, when he helped pioneer the handling of brain abscesses by excision as a means of reducing mortality from draining. She is familiar with the details of his important 1932 report on effective uses of electrosurgery, especially in the treatment of blood vessel tumors in the brain.

"Mary is an incredible optimist," Dr. Sachs says ruefully. "She had to be, to live with me." He takes a curious kind of pride in the fact that they were married only four months after they had met, in the Adirondack Mountain town of Keene Valley, N. Y., where the Sachs family had a summer home and where Mrs. Sachs then was working as a settlement house social worker.

Today, at the stage of his career where he is getting professional longevity plaudits from the *Journal of Neurosurgery*—such a printed posy was sent his way in the January issue—Dr. Sachs nevertheless continues to adhere to his old schedule: breakfast at 7 a.m., first operation at 8. More often than not, he continues to be the first to reach the operating room where his "Do It Now!" signs became a fixture many years ago. Save for his retirement from teaching, his only concession to the passing years has been a diminution in the number of operations he performs; until recently, he observed a six-day operating week. As usual, Mrs. Sachs never permits her husband to get off, of a morning, without first fixing his breakfast.

Sharper than ever is the contrast between Sachs, the stern operating room disciplinarian and Sachs, the healer orienting a patient, or a patient's family. He continues to have an active fear of becoming one of those physicians who barricade themselves behind secretaries, hence startles many a telephoning patient by picking up the receiver himself, as soon as it rings. He has an unrequited penchant for tinkering. Recently, when he moved his office in mid-town St. Louis, he did most of the picture-hanging himself and also made a special point of reserving for himself the dubious privilege of installing a pair of glass window-draftbreakers which he carried into the office one day.

If unhurried, his office memoranda turn up written in a fine, legible hand, but if they have been turned out under pressure, his handwriting is well-nigh undecipherable, not only to his staff but frequently to himself. Talk of an interesting case still engrosses him to the point of dramatization; when he dictates an operative note, he relives it, complete with gestures. He is as careful in his dress and habits as he is in his surgery. "There can be a tornado coming in over the horizon, but that will make no difference to Ernie Sachs," a colleague observes smartly. "He will take time to answer all of that day's letters and straighten out the top of his desk before leaving for cover."

Balancing some of the ex-students who vow that

Dr. Sachs was an operating room knuckle-rapper are those whose conscientiousness and aptitude earned them a startling amount of help, when it came time to obtain fellowships or professional entrée.

Even more, there is the downright reverence in which Dr. Sachs is held by his secretary and his anesthetist. The former, Miss Gertrude Moyle, has been with Dr. Sachs for thirty-two years. She never tires of recalling how he took an entire morning personally to observe an operation on her aged mother, and how from time to time he has driven to her home in St. Louis' south side to deliver a few tulips. Most of the 3,000 operations Dr. Sachs now has performed have had the assistance of his anesthetist, Miss Jessie Lindsey. To both of them, Dr. Sachs is "The Chief." Miss Lindsey remains in awe before his operating room dexterity, although he often has noted emphatically, "It's more important to be careful than swift."

Of the 3,000 operations, incidentally, about 1,500 have been for the removal of tumors. They helped Dr. Sachs create for the Washington University medical school one of the world's largest pathologic collections.

MISS LINDSEY contributed a revealing tribute to Dr. Sachs in a letter written for a volume Mrs. Sachs compiled among colleagues and students to present to her husband on the occasion of his 70th birthday.

"If you never have worked for the Chief, you don't know what a privilege it is to work for someone who inspires you to do your very best," the anesthetist wrote. "If others care more for the disease and its scientific aspects than for the patient, let them! But don't you! Just learn to care more particularly for the individual patient than for some special feature of the disease, for the Chief never forgets the patient in his interest in the tumor itself.

"Even in a hopeless case, where there is little to do except keep the patient comfortable, he does not throw up his hands and turn it over to the house staff or the interns. No sir, not even the dressings. Patients always get the best from him—sometimes food from his own house or perhaps a doll or a toy especially longed for. Nothing is too much trouble.

"If you want to see the Chief at his best, watch him as he handles some poor child with a recur-

rent tumor—a hopeless case. He does not give up. Even though he cannot give the family one thread of hope to hold on to, and even after he has told them the truth without any sugarcoating, he himself will stand up and defy the Grim Reaper, doing everything in his power to save his patient.

"Another neurosurgeon asked the Chief, 'Do you operate on glioblastomas?' When the Chief answered, 'Yes, we do,' the other asked, 'Why?' Dr. Sachs looked straight at the doctor and said, 'Everyone has a right to live as long as he can, and be as comfortable as possible while he is living. And, too, you are never sure what you are going to find until you look in.'

"Now that I have put down a bit of the Chief's philosophy as he lives it, all I say is that I am glad I work for him," Miss Lindsey concluded earnestly. "The world needs more men like him."

Dr. and Mrs. Sachs live in the three-story, eight-room brick house in suburban Clayton, Mo., which they have occupied since 1914. They rattle around in it a bit, now that their two sons have gone. The older boy, 32-year-old Dr. Ernest Sachs, Jr., has enhanced his father's happiness by deciding to become a neurosurgeon and currently is studying at the Lahey Clinic. He served in the army as an assistant surgeon in the European Theatre. Son Thomas Dudley, named after one of Mrs. Sachs' ancestors who was the first governor of Massachusetts, is a 23-year-old senior at the University of California. A navy veteran, he also plans to study medicine, giving the family a 1000 batting average.

In his younger days, Dr. Sachs was a mountaineer, taking Mrs. Sachs away from her poesy to scramble up some peak in the Adirondacks or the Alps. By now, of course, that avocation regretfully has gone by the boards, as has the string quartet which Dr. Sachs organized and kept active in St. Louis much as he had at Harvard. Acquisition of a hothouse has helped the surgeon pursue his fetish for wearing a flower in his buttonhole whenever possible.

Dr. Sachs vows that his enthusiastic efforts in gardening and orchid cultivation have proved none too successful thus far. "I'm a dub," he exclaims. He usually manages to add hastily, "But you should have seen how darn well I did with tomatoes last summer at Keene Valley. Turned out a gallon of tomato soy, believe it or not."

Still built along plump lines, he constantly is resolving to watch his diet, but never does. He

dotes on fish dishes, likes Sherry and Rhine wine, can whip up a very tasty apple popover. In his youth, he was an inveterate pipe-smoker, but for many years his pipe-smoking has been reserved for summer walks in the hills. "Gad, I'm almost a saint!" he cries in sudden realization, as he explains that he gave up ordinary smoking to accommodate Mrs. Sachs' allergy.

Both the surgeon and his wife are extremely fond of opera and theater and of reading. A mite apologetically, no doubt because the jacket drawings shock him, Dr. Sachs confesses that he usually spices his medical reading with biographies and book-club selections. His personal library numbers 5,000 volumes.

IT HAS been a long, long road to Tipperary for neurosurgery since Dr. R. J. Godlee performed the first brain tumor removal in November, 1884. Dr. Sachs terms "phenomenal" the advances which have been wrought during his lifetime, and in which he has played so active a part.

"What is the future of neurologic surgery?" he asked in the conclusion to his 1945 book. "Can it be further developed and perfected, or have we about reached the end of possible achievement?"

Providing young men in the field do not permit themselves to become mere technicians, Dr. Sachs could come up with but one answer.

"The possibilities for improvement are almost limitless," he wrote. "By means of technical advances alone, tumors and other types of lesions will be dealt with successfully, and I feel sure that certain brain tumors which today (1945) are

treated inadequately, will be removed successfully or, if not removed, will be destroyed by other means.

"The recent work of Dandy on the treatment of intercranial aneurysms is an example of one new field. The pioneer work of Peet, Adson and Smithwick in the treatment of hypertension by sympathectomy is a further advance in surgery of the sympathetic nervous system, and this is but an opening wedge for the study of other uses for this type of surgery.

"The surgical treatment of myasthenia gravis by the removal of a thymoma is still another virgin field which, when understood, may throw new light on the function of the thymus gland. Even some of the degenerative diseases of the nervous system, such as multiple sclerosis and the muscular dystrophies, may respond to surgical measures."

He added, prophetically, "We certainly have little conception as yet of the possibilities that may be opened up when radioactivity is combined with the powerful action of the cyclotron.

"The indisputable proof that neurologic surgery is continuing to broaden its scope lies in the fact that increasing numbers of young men are even now entering this ever widening field."

One day recently, after Dr. Sachs had been regaling his wife with the details of an intriguing new case, she turned to him suddenly and exclaimed, "Sweetheart, thank the Lord I'm not married to a starch and blueing salesman!"

To this, even after forty-five years of exacting practice, Ernie Sachs said a prompt and heartfelt Amen.

ROBERT H. SCHULMAN

# EDITORIALS

## TASK FORCE MEDICINE

**F**AR-REACHING in its significance and of the deepest concern and absorbing interest to those in the medical profession is the recent task force report on Federal medical services, published by the Hoover Commission on Organization of the Executive Branch of the Government.

The 16-member task force committee, which included 11 members chosen because they are medical authorities, did not investigate compulsory health insurance, ruling that this issue was beyond the scope of its inquiry.

What the committee did do was to make an exhaustive survey of existing Federal medical facilities and to recommend sweeping reorganization of these services.

The report was amply documented with facts to support its basic thesis, that the principal need to correct existing faults is an overall plan. The committee pointed out that, first, a clear definition of the extent of the government's responsibilities in the medical field must be drawn by Congress, and, second, an organization to carry out the foregoing commitment must be drafted. The committee's fundamental recommendation is that Federal subsidies be directed to building up medical schools and community and private hospitals, with a minimum of government supervision.

The report makes a sharp distinction between military and non-military medicine, with the recommendation that general hospitals of the armed services in which dependents are served, and all medical and hospital installations of the Veterans Administration, be integrated into the civilian health program.

In releasing the report, Herbert Hoover, chairman of the commission which directed this and other task force studies, made it clear

that task force findings in any field do not necessarily represent the final conclusions of the commission.

Under existing conditions, the committee said, the government is assuming uncalculated obligations without an understanding of their ultimate cost, the lack of professional manpower to execute them, or the adverse effect on the hospital system of the nation.

Substantiating this judgment, the committee reported that in the New York area four Army and Air Force hospitals could be closed, with a resulting reduction in medical officer requirements of 80 to 85 per cent, and the further advantage of providing a better standard of service by such a move.

Recommendations of the report are based on the assumption that a Cabinet post of health, education, and welfare will be created to take over the functions of the Federal Security Agency. The committee excluded from its consideration the possibility of a separate Cabinet department for health alone. The report specified, however, that if such a health department were instituted, the recommended organization could be adapted to such a plan.

As suggested by the report, a national bureau of health would be established, headed by a doctor of medicine who would report only to the Cabinet secretary, with the proviso that no administrative under-secretary should be a physician.

Within the bureau there would be three divisions: (1) medical care, (2) public health, and (3) research and training. The medical care division would assume all Federal hospitalization and direct care, including the general hospitals of the military establishments and all medical facilities of the Veterans Administration.

Present functions of the Public Health Service would be pared down in the proposed public health agency to retain only administering grants-in-aid in that field, and in addition, the new division would then take over the Food and Drug Administration and run an administration clearing house.

The projected research and training agency would take over the research program of the National Institutes of Health and the clinical research center project, activities which have been administered by the present Public Health Service.

Work of the Federal Children's Bureau, the report recommends, should continue as a unit under the secretary of the proposed department, except that within three years its specific programs on maternal aid and crippled children should be transferred to the new bureau of health.

The present method of the Veterans Administration in securing part-time services of private specialists was enthusiastically approved by the committee, with the recommendation that this system be expanded as far as possible under the proposed set-up. An end to the commissioning of officers for the Public Health Service was recommended as a step to facilitate the carrying out of the above personnel method. It was recommended that all military medical procurement be done by one branch, under a medical officer.

Congress must make certain fundamental policy decisions in regard to the national health system, the report pointed out. Number one is the question of whether medical service should be given to all veterans, or, in the case of non-service connected disabilities, only to those in financial need. A voluntary health insurance plan for veterans was suggested, calling for government payment of premiums where the veteran cannot pay. Also put up to Congress were the questions of whether civilian dependents of military personnel are entitled to free medical care and how long disabled officers should be cared for in military hospitals.

J. S.

## REHABILITATION IN THE MANAGEMENT OF CARDIOVASCULAR PROBLEMS

THE PERSON who suffers from a disabling cardiovascular disease must be considered as much a candidate for rehabilitation training as the one who has been stricken by any other type of physical disability. Though a somewhat different approach may have to be followed in handling cardiac patients, optimum results can be obtained if evaluation and conditioning training are begun as soon as feasible after the acute phase of the illness has subsided, and are done under strict medical surveillance.

According to Dr. Howard A. Rusk, studies from many sources have shown that patients observed after prolonged bed rest show a decreased blood volume, a decrease in the size of the heart, an inability to do sustained work, and a loss in reaction time. There was also a marked loss of vitamins in the urine. It was also found practically impossible to keep patients in normal calcium balance the first six weeks of bed rest regardless of diet or medication. It also required more than twice as much protein in the diet to keep the patient in positive nitrogen balance.

It has been noted clinically that when patients requiring bed rest are given conditioning exercises for the unaffected parts as soon as it is medically feasible, these deconditioning phenomena are markedly decreased, and, in some instances, obviated. When the Army Air Forces Rheumatic Fever Control program was organized during the war, 85 per cent of the patients with rheumatic fever were of necessity discharged from the Army as unfit for further military service. A program of planned convalescence was initiated, starting with bed exercises under close supervision a week after the temperature subsided, and gradually increasing until the end of the fifth month when the patient had a full thirty days of eight-hours-a-day on-the-job training on the air base at which he was hospitalized.

Dr. Rusk advocates the need for basic re-

search in criteria for evaluating the capacity of individual patients to work. As an example, he has called attention to the energy requirements in using the bed pan in the ordinary hospital bed, as compared with the energy expended in taking one or two steps to a commode, and has pointed out that in actual practice most of the leading cardiologists have discarded the bed pan routine in almost all instances, although, by custom, it is still practiced in many hospitals during the early rest period in coronary thrombosis. Before arbitrarily discontinuing this practice, there is need for basic study of such energy requirements in order to put this practice on a factual basis.

With proper management, many chronic cardiac patients progress favorably on a reasonably active regimen. The physician must, of course, be explicit in his instruction and suggestions to the patient, so that whatever precautionary measures are required will be observed.

Rather than assume that the person who has

a chronic cardiac disease must perforce lead an inactive, dependent existence, rehabilitation studies at Bellevue Hospital in New York City have shown that very often such "disabled" persons, when placed in jobs commensurate with their reduced physical capacity, establish excellent employment records, showing even greater production rates, and lower accident and absentee rates than employees who are not in any way incapacitated.

To estimate the individual's capacity for work, it is necessary to observe him at work, and to determine how he goes to and from work. It is often necessary to advise a change of occupation and mode of transportation—and sometimes of residence—so that there will be no undue taxing of the patient's strength and energy. For most patients, it has been found that work—of the proper sort and suited to the individual—is one of our most valuable therapeutic tools in the management of all types of chronic disease.

A. E.

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# OFFICE PRACTICE

To provide the general practitioner, as well as the specialist, with concise, readily available information on the latest, proved methods of diagnosis and treatment of conditions commonly encountered in an average practice, POSTGRADUATE MEDICINE offers this department to its readers. It is not, of course, intended to present these discussions as the only acceptable therapeutic procedures to be used, but rather to offer simple regimens and recommendations based on the extensive experience of the physicians who prepared these summaries.

## HEMORRHOIDS - - -

**H**EMORRHOIDS or "piles" are tumors made up of normal and abnormal elements of radicals of the superior, middle, and inferior hemorrhoidal veins and perivascular tissue. They are found beneath the mucous membrane of the lower rectal segment, anal, and perianal skin.

### CLASSIFICATION

Internal, external or combined internal-external. The majority are combined. External skin tags are not true hemorrhoids.

### ETIOLOGY AND PATHOLOGY

Hemorrhoids are essentially varicose veins and are associated with some degree of infection. The portal of entry of such infection is through the anal crypts. The inflammatory process resulting in the production of hemorrhoids is a perivascular process differing from the intimal process found in the lower extremities in the production of varicose veins.

Increased venous pressure in the veins of this area resulting from the upright position of the body, the absence of valves in the veins, and the constricting influence of the bowel musculature itself accentuated by pregnancy, constipation, chronic catharsis, increased intra-abdominal pressure from any cause, obstruction of the portal system, heart disease, pelvic and rectal tumors may be factors in the production of hemorrhoids.

Following the introduction of infection, the diseased vein walls rupture, giving rise to all stages of inflammation, thrombi, fibrosis, edema, or gangrene.

### SYMPTOMS

Varying degrees of bleeding, pain and protrusion.

#### *Clinical*

#### 1. External Hemorrhoids

a. Simple—Appear as engorged veins beneath the anal margin. Straining or squatting may be necessary for demonstration.

b. Thrombosed—Vary from single, small, thrombosed pile to massive thrombosis and edema. Edema of anal margin may predominate.

c. External skin tags—Fibrous folds of skin at the anal orifice. Result most commonly following hemorrhoidectomy or from a thrombosed external hemorrhoid.

d. Differential diagnosis—External hemorrhoids

should be differentiated from nonsyphilitic condyloma, varying types of ulcers, such as tuberculosis and epithelioma.

#### 2. Internal Hemorrhoids

a. Simple—Found proximal to the pectinate line and visualized by anoscope or proctoscope; may be overlooked on palpation because of soft, rubbery character.

b. Complicated—Prolapsing, thrombotic, or ulcerated.

c. Differential diagnosis—Internal hemorrhoids should be differentiated from hypertrophied papillae and rectal polyps.

### TREATMENT

*General Measures*—The presence of hemorrhoids does not necessarily warrant treatment. Hemorrhoids causing symptoms should be treated unless there are obvious contraindications. Conservative measures are usually indicated for the acute phases.

#### 1. External Hemorrhoids

a. Simple—Uncomplicated external hemorrhoids are ordinarily associated with internal hemorrhoids and should be treated by excision as combined hemorrhoids.

b. Thrombosed external hemorrhoids—Small, discrete clots not causing symptoms may subside without surgical excision. Pain, however, is usually associated and may be extreme. Excision of clots with overlying skin is desirable. This may be done as an office procedure following injection of the thrombosed external hemorrhoid with 1 per cent procaine.

Massive, thrombosed, external hemorrhoids with varying degrees of edema are best treated conservatively until the edema and infection have subsided. Surgical excision is usually indicated later. Bed rest, elevation of the buttocks, wet dressings with applications of extremes of hot or cold are desirable. Ointments, salves, and suppositories are of little value.

### NONOPERATIVE TREATMENT

#### 1. Internal Hemorrhoids

a. Simple, uncomplicated internal hemorrhoids may

frequently be treated satisfactorily by injections.

Patients who complain of bleeding without pain or excessive protrusion, who, on examination, present internal hemorrhoids and who do not exhibit evidence of other disease as demonstrated by stricture or pain on examination, can usually be given relief from their symptoms by the injection method of treatment.

Two solutions have been used most commonly for the injection treatment of hemorrhoids. A 5 per cent quinine and urea hydrochloride solution is probably the most popular and safest. One or two hemorrhoids at a time can be injected with 1 to 2 cc. of the solution in each pile.

The needle is thrust into the substance of the internal pile above the pectinate line and the solution injected, symmetrically distending the pile. This produces a perivascular inflammatory process, resulting in shrinkage of the hemorrhoidal mass as healing and fibrosis take place. Usually, two to three injections at intervals are given into each hemorrhoidal area.

Phenol, 5 per cent, in a vegetable oil solution, such as almond oil, can also be used. Smaller amounts of the solution are injected into each pile. Longer intervals should elapse between injections but the resulting fibrosis in the hands of some has been reported as more satisfactory than that resulting from quinine and urea.

Attention to bowel regulation and other hygienic measures for the general welfare of the patient will materially improve results of this type of treatment.

b. Complicated internal hemorrhoids. Internal piles associated with thrombi, infection or with any other type of anorectal disease should be removed surgically.

c. Complications of the injection method of treatment. Superficial sloughs may occur from excessive pressure on the overlying mucosa. Pelvic phlebitis, abscess formation with fistula and other complications are rare but they do occur. Sensitivity to quinine is not uncommon.

### OPERATIVE TREATMENT

It has been the experience of the majority of proctologists that the largest number of patients with hemorrhoids will be more satisfactorily relieved of their difficulty by the operative method of treatment.

The most acceptable type of operative treatment consists of excision and ligation. Clamp and cautery techniques are largely being abandoned.

Details of operative treatment will not be outlined in this abstract. Suitable techniques are described in any of the more recent proctologic texts, such as those by Buie, Yeomans, Bacon, and others.

In general, with all these techniques which have minor variations, the following principles are employed: minimal attempts at preoperative sterilization of the area and the avoidance of strenuous preoperative catharsis and irrigations.

Caudal, spinal, or sacral anesthesia is the most satisfactory, if available. Many surgeons utilize anesthesia

in oil preparations injected into the muscles at the time of operation for the control of postoperative pain. There may be abscess formation and other complications following this procedure and it is not recommended for the inexperienced.

The prone position is recommended for surgery, with its improved exposure and lessened bleeding over the lithotomy position. Undue trauma is avoided to the musculature and perianal tissues by unnecessary dilations and retraction. When an actual narrowing of the anal canal due to fibrosis is present, division of the subcutaneous portion of the external sphincter muscle is indicated rather than an extensive dilatation.

Primary consideration is given at the time of operation to the removal of the primary piles. These are usually found in the right anterior, right posterior, and left central quadrants. Secondary piles may be excised as indicated. The mucosa of the anal canal is reconstructed to its normal position at the pectinate line when feasible. Adequate skin must be removed for the avoidance of skin tags and an adequate open sulcus left for drainage.

### POSTOPERATIVE CARE

Plugs and large packs are to be avoided. Snug, light vaseline dressings should be applied at the time of operation. If some oozing or uncontrolled bleeding is present, gelfoam or some other type of anticoagulant dressing is helpful.

Postoperative pain is controlled by the use of hot wet packs. Hot packs should be started on the anal area as anesthesia wears off. Renewal of hot wet dressings every hour for the first forty-eight hours will give adequate relief of postoperative discomfort. Sedation should be employed as necessary. The usual procedures may be necessary for difficulty in voiding.

After the first twenty-four or forty-eight hours, sitz baths may be adequate for cleanliness and the relief of discomfort. Three to four days of bed rest is probably all that is necessary for the average patient.

This postoperative period is an ideal time to correct existing bowel dysfunctions. A low residue or bland diet may be given from the beginning. If there have been severe symptoms of irritable colon, small amounts of tincture of belladonna and luminal with meals may be helpful. Excess roughage, mineral oil, and any other type of catharsis are to be avoided. Mineral oil tends to delay healing and predisposes to infection.

On the third postoperative day, a small oil retention enema may be given when necessary, followed by a one pint saline enema the following day. On the third or fourth day the anal canal should be gently dilated with a well lubricated gloved finger to prevent wound edges from falling together. These gentle dilations should be continued every four or five days until the operative wound is completely healed. This will require a period of observation of three to four weeks. The postoperative use of ointments, greases, suppositories, and so forth, is to be condemned.

# Consultation Service

This special consultation information service is offered as a regular monthly feature of *Postgraduate Medicine*. Readers are invited to call on this Service for answers to difficult medical problems from members of our Editorial Board best qualified to help. Each question will be answered by mail and those of general interest will be published each month. Address all communications to Consultation Service, *Postgraduate Medicine*, 516 Essex Building, Minneapolis 3, Minnesota.

## ULCERATIVE COLITIS

**QUESTION:** What is the best treatment for ulcerative colitis, accompanied by anemia?

M.D.—Kentucky

**ANSWER:** Until the relative importance of the various factors concerned in the pathogenesis of chronic ulcerative colitis are better understood than they are at present, no "best treatment" applicable to all cases can be stated. Individualization in therapy empirically tried is the best that can be offered.

The most helpful procedures are as follows:

1. Complete rest in bed while there is fever and more than three stools daily.
2. High protein diet chiefly in the form of red meats, liver, kidneys, sweetbreads, and lean pork, with avoidance of coarse vegetables, fruits, and other high residue foods.
3. Cevitamic acid (vitamin C) 1 to 5 mg. daily depending on amount of fever, and vitamin B complex usually 2 capsules daily.
4. Iron and transfusions may be used for anemia, but response is not very satisfactory unless the underlying colitis is improved.
5. Most patients with ulcerative colitis have serious emotional problems and anxieties which need to be relieved, if possible; this is often difficult to accomplish.
6. No categorical statement concerning surgical intervention—ileostomy and possible subsequent colectomy—can be made, as resort to surgery is an individual case problem.

FRANCIS G. BLAKE

## VITAMIN E FOR ANGINA PECTORIS

**QUESTION:** What has been the experience with the use of vitamin E in angina pectoris?

M.D.—Ohio

**ANSWER:** Although many animal experiments indicate biological activity of vitamin E, there are no well controlled observations to indicate that it has any effects in man. This may be due to the fact that the amounts of vitamin E in ordinary foods are adequate for human nutrition even on otherwise poor diets. The possibility exists that vitamin E may be synthesized in humans.

It should not be forgotten that angina pectoris is a subjective condition which may be influenced psychologically as well as by drugs.

Five cases of angina pectoris that had been followed

**NOTE:** On page 78 of the January 1948 issue, part (c) of the answer to the question on pre-eclampsia diet should have read "Fat is not especially necessary. . . ."

in this clinic for several months were treated with daily doses—400 mgm. of mixed natural tocopherols for periods of one to two months. Control observations of exercise performance on a motor driven treadmill with continuous measurements of oxygen consumption, ventilation, heart rate and EKG, and blood pressure were obtained. Serial tests during treatment and while on placebo capsules showed no significant changes. There was no consistent subjective improvement while the patients received the drug.

WILLIAM S. MCCANN

## TREATMENT OF BOILS

**QUESTION:** Is penicillin of value for the treatment of boils? Is x-ray treatment helpful? What measures may be taken to prevent their recurrence?

M.D.—Iowa

**ANSWER:** Penicillin is of marked value in the treatment of boils if given either systemically or locally. A daily injection of 300,000 units of penicillin in oil and beeswax for several injections usually causes the rapid healing of existing furuncles but does not prevent recurrences.

In single or relatively few lesions, infiltration of the furuncle with 50,000 units of penicillin per cubic centimeter of saline or distilled water usually causes rapid involution. A second injection of the boil after twenty-four hours may be necessary.

In chronic furunculosis extreme cleanliness of the body through daily multiple baths is a requisite. Auto-genous vaccines, staphylococcus toxoid, and quinine given internally over a long period are of value. X-ray given empirically in the past, has been largely supplanted by use of antibiotics and sulfonamide drugs.

BEDFORD SHELMIER

## INDICATIONS FOR TONSILLECTOMY

**QUESTION:** Is tonsillectomy beneficial in cases of thyrotoxicosis, acute rheumatism, nephritis?

M.D.—California

**ANSWER:** Cases have been reported in which active thyrotoxicosis has disappeared following removal of infected tonsils.

For years it has been debated whether or not the removal of tonsils lessens the possibility of a child's developing acute rheumatic fever, and whether or not, following an attack of rheumatic fever, removal of the tonsils makes recurrences less likely.

In acute nephritis, it would seem wise to remove infected tonsils.

W. D. STROUD

# New Drugs and Instruments

Information published in this department has been supplied by the manufacturers of the products described.

## GLUCO-THRILIC

**PURPOSE:** An antibiotic nasal decongestant.

**COMPOSITION:**

Ephedrine (as the lactate) . . . . . 1 per cent  
Tyrothricin . . . . . 1:15,000

in an isotonic dextrose solution containing cetyl trimethyl ammonium acetate as a solubilizing and stabilizing agent.

**INDICATIONS FOR USE:** In relief of nasal congestion accompanying the common cold, acute catarrhal rhinitis, allergic rhinitis, acute rhinosinusitis, and acute ethmoiditis.

**DOSAGE AND ADMINISTRATION:** May be administered in the form of a spray, by drops, or nasal pack. Adult patients with acute, upper respiratory infections should be instructed to use Gluco-Thrilic by spray or drops three or four times daily. Two to four drops should be instilled in each side of the nose. For children, one or two drops in each side of the nose three times daily will usually suffice.

**HOW SUPPLIED:** In 1-ounce bottles with dropper cap, and 1-pint bottles.

**PRODUCER:** Parke, Davis & Company, Detroit, Mich.

## DIENESTROL "RARE"

**PURPOSE:** Synthetic, crystalline estrogen for oral administration.

**INDICATIONS FOR USE:** Menopausal therapy and treatment of suppression of lactation.

**CAUTIONS:** Contraindications of Dienestrol are similar to those for estrogens—both natural and synthetic, such as familial or personal history of malignancy of the reproductive system.

**DOSAGE AND ADMINISTRATION:** Menopausal syndrome: 0.1 to 0.5 mg. daily for mild to moderately severe symptoms; 0.5 to 1.5 mg. daily for severe symptoms or when climacteric has been artificially induced. Suppression of lactation: 0.5 mg. three times daily for the first three days; 0.5 mg. daily for the fourth through tenth day.

**HOW SUPPLIED:** In small, sugar-coated tablets in potencies of: 0.1 mg. (yellow), and 0.5 mg. (orange); bottles of 100 and 1,000.

**PRODUCER:** Rare Chemicals, Inc., Harrison, N.J.

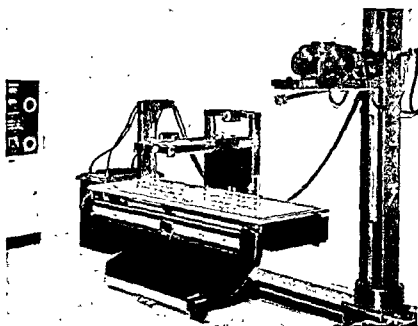
## VIM LAMINEX NEEDLE

**PURPOSE:** Hypodermic needle.

**DESCRIPTION:** "Laminex" is the brand name for a new stainless steel for needle manufacture. It is a laminated stainless steel with the temper of high carbon steel.

All the former features of the vim needle have been included in the manufacture of this new needle. vim "Laminex" needles are available at regular vim prices through all leading Surgical Supply Dealers. Free descriptive folder is available from:

**PRODUCER:** MacGregor Instrument Co., Needham 92, Mass.



## MAXISCOPE 500

**DESCRIPTION:** High-voltage diagnostic x-ray apparatus. It mechanizes many operations, including the determination of exposure times, the automatic selection of spot-film areas, and automatic protection from excess radiation when the machine is adapted for fluoroscopy. The machine has pedal-controlled, variable-speed hydraulic motor-drive for angulating the table and the automatic centering of exposure areas.

The voltage has been increased from 100,000 volts to 130,000 volts to provide clearer radiographs of dense portions. The x-ray table incorporates phosphorescent "eyes" which show all protruding parts for orientation of the physician, patient, and table during the darkness required for fluoroscopy.

**PRODUCER:** General Electric X-ray Corporation, Milwaukee 14, Wis.

## PHENO-BEPADOL TABLETS

**PURPOSE:** Sedative and dietary supplement.

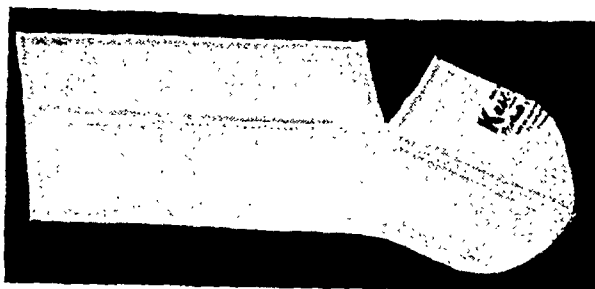
**COMPOSITION:** Each Pheno-Bepadol Tablet contains phenobarbital  $\frac{1}{4}$  gr.; thiamine hydrochloride 3 mg.; riboflavin 2 mg.; niacinamide 10 mg.; calcium pantothenate 1 mg.; pyridoxine hydrochloride 0.5 mg.; secondary liver fraction and dried yeast.

**INDICATIONS FOR USE:** For patients suffering from neuroses, functional digestive disorders, nervous colitis, diarrhea, the nervous vomiting of pregnancy, overwrought nerves, hyperthyroidism, and simple insomnia.

**DOSAGE AND ADMINISTRATION:** One or two tablets, taken by mouth daily, as prescribed by the physician, and may be adjusted to the intensity of reaction desired for the individual patient.

**HOW SUPPLIED:** Bottles of 100 and 1,000 tablets.

**PRODUCER:** International Vitamin Division, Ives-Cameron Company, Inc., New York 16, N.Y.



### KAST-SOCKS

**DESCRIPTION:** Surgical sock to protect the toes of persons wearing plaster leg casts, made of fine white combed cotton. Rubber binding inserted at both heel and top opening makes these socks fit neatly over the entire cast. They can be washed and used repeatedly.

**PRODUCER:** Plaut Products, Cincinnati 2, O.

### VYCOM "B" TABLETS

**PURPOSE:** High-potency vitamin B complex for oral administration.

**COMPOSITION:** Each Vycom "B" Tablet contains:

Thiamine hydrochloride (vitamin B <sub>1</sub> )	5 mg.
Riboflavin (vitamin B <sub>2</sub> )	10 mg.
Nicotinic acid amide	150 mg.
Yeast (U.S.P.)	100 mgm.

**INDICATIONS FOR USE:** For nutritional supplementation in the vitamin B deficiency syndromes when oral therapy appears adequate, or during and after withdrawal of parenteral therapy. These indications include: beriberi, ariboflavinosis, and pellagra. Also useful pre- and post-operatively, and in pregnancy, lactation, fever, and hyperthyroidism, and in gastrointestinal disorders, where intake, absorption or utilization of the water-soluble vitamins is impaired.

**DOSAGE AND ADMINISTRATION:** One Vycom "B" Tablet daily, or as recommended in individual cases.

**HOW SUPPLIED:** In bottles of 100 tablets, sugar-coated red.

**PRODUCER:** Bristol Laboratories, Inc., Syracuse, N. Y.

### DEKA

**PURPOSE:** Sedative expectorant.

**COMPOSITION:** Each fluid ounce contains codeine sulfate 64 mg. (1 gr.); calcium iodide 0.13 gm. (2 gr.); chloroform 0.13 (2 gr.), with wild cherry, tolu, squill, yerba santa, citric acid, and menthol. Alcohol content, 6.5 per cent, glycerin content, 3 per cent.

**INDICATIONS FOR USE:** In all cases of nonproductive cough other than tuberculosis.

**DOSAGE:** Adults, 1 or 2 teaspoonfuls; children, ½ or 1 teaspoonful. May be taken three or 4 times daily.

**CAUTION:** *It should not be used in tuberculosis!*

Idiosyncrasy to iodides, while not common, may be serious, and small doses may cause distressing symptoms of iodism in those who are sensitive.

**HOW SUPPLIED:** Bottles of 2, 4, and 16 fluid ounces and 1 U.S. gallon (128 fluid ounces).

**PRODUCER:** Winthrop Chemical Company, Inc., New York 13, N. Y.

### ENDOGLOBIN-C WITH FOLIC ACID

**PURPOSE:** Treatment of anemic patients who require several individual medicinal agents for a mixed deficiency.

**COMPOSITION:** Each sugar-coated tablet (orange) contains:

Liver residue (secondary fraction, 50:1, derived from 10 gm. fresh liver)	0.2 gm.
Ferrous sulfate exsiccated	0.2 gm.
Thiamine hydrochloride	1 mg.
Riboflavin	0.66 mg.
Nicotinic acid	10.0 mg.
Ascorbic acid	50 mg.
Folic acid	1 mg.

**DOSAGE AND ADMINISTRATION:** Three to six tablets daily.

**HOW SUPPLIED:** Bottles of 40, 100, 500, and 1,000 tablets.

**PRODUCER:** Endo Products, Inc., Richmond Hill, N. Y.

### PROGESTORAL TABLETS

**PURPOSE:** For high-potency oral luteal therapy.

**COMPOSITION:** Each tablet contains 25 mg. of pregnenolone (anhydro-hydroxy-progesterone).

**INDICATIONS FOR USE:** In the treatment of functional uterine bleeding and threatened abortion.

**HOW SUPPLIED:** Boxes of 20 and 100 tablets.

**PRODUCER:** Roche-Organon, Inc., Nutley, N. J.

### ELUTEIN

**PURPOSE:** Protein supplementation of the diet.

**COMPOSITION:** Intact natural protein from nonagenized wheat flour (77 per cent), plus L-Lysine Hydrochloride (4 per cent). Total nitrogen: 13.4 per cent.

**DESCRIPTION:** A bland, palatable powder which may be taken plain or mixed into any number of food preparations. High dosages do not disturb the gastrointestinal tract.

**DOSAGE AND ADMINISTRATION:** 30 gm. of Elutein daily can maintain nitrogen balance in the average patient. Larger amounts will be indicated according to degree of nitrogen deficiency. Elutein may be incorporated into cakes, puddings, custards, cereals, etc., without creating any foreign taste.

**HOW SUPPLIED:** 1 lb. in a glass bottle, 12 bottles to a shipping carton.

**PRODUCER:** Interchemical Corporation, Biochemical Division, Union, N. J.

### URESTRIN AND VITAMIN B

**PURPOSE:** Natural crystalline estrogens and vitamin B complex in a syrup base, for use in the treatment of combined hormonal and vitamin deficiencies.

**COMPOSITION:** Each fluidounce contains:

Estrogenic substances	30,000 I.U.*
Thiamine hydrochloride	30 mg.
Riboflavin	30 mg.
Nicotinamide	300 mg.
Alcohol	5 per cent

\*Consisting of estrone 3 mg. and traces of other naturally occurring estrogens (estradiol, equilin, equilenin and hippulin).

**DOSAGE AND ADMINISTRATION:** One to three teaspoonfuls daily, depending on severity of symptoms.

**HOW SUPPLIED:** 12-ounce bottles.

**PRODUCER:** The Upjohn Company, Kalamazoo, Mich.

### GLYTHEONATE

**PURPOSE:** Management of various related conditions of many cardiovascular patients such as hypertensive states accompanied by increased capillary fragility.

**COMPOSITION:** Each tablet (green-uncoated) contains:

Theophylline-sodium glycinate	325 mg. (5 gr.)
Phenobarbital	16.2 mg. (¼ gr.)
Rutin	20 mg.

**CAUTIONS:** May be habit forming.

**DOSAGE AND ADMINISTRATION:** 1 to 2 tablets three times a day or as determined by the physician. To be dispensed only by or on the prescription of a physician.

**HOW SUPPLIED:** Bottles of 100 and 500.

**PRODUCER:** The E. L. Patch Company, Boston, Mass.

### MEPRANE-PHENOBARBITAL

**PURPOSE:** For relief of menopausal symptoms.

**COMPOSITION:** Each tablet contains:

Meprane (3,4-bis (m-methyl-p-propionyloxyphenyl) hexane)	1 mg.
Phenobarbital	0.16 mg.

**CAUTIONS:** Phenobarbital may be habit forming.

**DOSAGE AND ADMINISTRATION:** In menopause, initial therapy—3 Meprane-Phenobarbital tablets daily, in divided dosage. Physicians may replace part of this dosage with Meprane (without Phenobarbital) if less sedation is required. For maintenance therapy—Meprane-Phenobarbital, or Meprane, 1 or 2 tablets daily.

**HOW SUPPLIED:** Bottles of 100 and 500 tablets.

**PRODUCER:** Reed & Carnrick, Jersey City, N. J.

### SODIUM SULFACETIMIDE NASAL SOLUTION 10%

**PURPOSE:** Relief of nasal congestion incident to the "common cold" and preventing complications.

**COMPOSITION:** Aqueous solution of sodium sulfacetimide with dl-desoxyephedrine hydrochloride 0.125 per cent buffered to pH 7.4.

**DOSAGE AND ADMINISTRATION:** Nasal instillation of 1 to 3 drops, four times daily, at the onset of the earliest symptoms of a cold is the preferred treatment.

**PRODUCER:** Schering Corporation, Bloomfield, N. J.

### RESTROL

**PURPOSE:** Oral estrogenic therapy.

**INDICATIONS FOR USE:** Management of menopausal syndrome, treatment of suppression of lactation, amenorrhea, and other hypo-ovarian states.

**CAUTIONS:** Contraindications for Restrol are similar to those for natural estrogens, viz., familial or personal history of malignancy of reproductive organs.

**DOSAGE AND ADMINISTRATION:** Menopausal syndrome: 0.1 to 0.5 mg. daily for mild to moderately severe symptoms; one tablet of 0.5 mg. to three tablets of 0.5 mg. daily for severe symptoms. Suppression of lactation: Three tablets of 0.5 mg. daily, in divided doses for three days, followed by one tablet of 0.5 mg. daily for one week. Amenorrhea and other hypo-ovarian states: One or two tablets of 0.1 mg. daily, increased to 1.0 mg. daily as indicated.

**HOW SUPPLIED:** In small tablets of two strengths, 0.1 mg. (coated pink), and 0.5 mg. (coated green); bottles of 100, 500, and 1,000.

**PRODUCER:** Central Pharmaceutical Company, Seymour, Ind.



### MINERALIGHT MODEL H

**DESCRIPTION:** Ultraviolet lamp, equipped with a Woods filter, and operating on 110 volt A.C. from standard electrical plug-in connections. A full guarantee is furnished by the producer. Model H Mineralight, in a light-weight aluminum and plastic case, is being made available as part of a kit containing fluorescent mineral samples. Full information can be obtained from:

**PRODUCER:** Ultra Violet Products, Inc., Los Angeles, Calif.

### DELVALIN-ASPIRIN

**PURPOSE:** For relief of pain and nervous tension.

**COMPOSITION:** Each capsule contains 30 mg. (½ gr.) of Delvalin 5-ethyl-5-(1-methyl-1-butenyl) barbituric acid and 0.30 gm. (5 gr.) aspirin (acetylsalicylic acid).

**INDICATIONS FOR USE:** In myalgic, neuralgic and arthritic conditions, particularly in hypersensitive, neurasthenic or nervous patients, or those suffering from anxiety tension states. Useful in allaying fear and controlling pain preceding minor surgical operations.

**DOSAGE AND ADMINISTRATION:** One capsule of Delvalin-Aspirin vinbarbital and aspirin administered orally every three or four hours is recommended for the average adult dose. In pediatrics and geriatrics the dosage should be regulated accordingly. The capsules should be administered not more than one hour prior to performing any surgical or dental procedure.

**HOW SUPPLIED:** In bottles of 100 and 1,000.

**PRODUCER:** Sharp & Dohme, Inc., Philadelphia, Pa.

### FLUOROSSTEOL

**PURPOSE:** For inhibition of dental caries.

**COMPOSITION:** Prepared from the hard, thigh bones (femur) of government inspected cattle. Approximately 95 per cent of the mineral matter present as a double salt of calcium carbonate and tribasic calcium phosphate, with an additional 1.5 per cent in the form of tribasic magnesium phosphate. Standardized to contain not more than 0.2 per cent of calcium fluoride.

**INDICATIONS FOR USE:** Of greatest value when administered to infants and children.

**ADMINISTRATION:** Orally. Infants and children under 3 years of age, 10 gr. daily in food or fluids; children between 4 and 8 years of age, 15 gr. daily, and children over 15 years of age or adults, three 5 gr. tablets daily.

**CAUTION:** Not indicated where the fluoride content of the water supply exceeds 0.5 parts per million. Fluorosteol is contraindicated in renal disease due to the danger of cumulative toxicity.

**HOW SUPPLIED:** In 5 gr. tablets and capsules.

**PRODUCER:** The Armour Laboratories, Chicago 9, Ill.

# Leaves from a Doctor's Diary

By MAURICE CHIDECKEL

February 1 . . . They are still sentient men, those segments of mankind that have been stigmatized, repudiated, and incarcerated in the asylums for the insane. In many, tragedies shattered their brains and their lives; in others erratic parents made a black rent in the texture of their immature lives, and the rent widened as the years rushed on; a cruel stepfather or stepmother worked havoc with the autonomic nervous system and wrecked the highest functioning mechanism of living man, the mind; problems and conflicts, intrigues and disappointments, the rise and fall, the ebb and flow of stormy happenings, impeded, distracted, and eventually destroyed their mentalities; the blasting of cherished hopes; the ambitions, expectations, and certainties that were fused in the crucible of their imaginations and that proved but illusions, made wrecks of those who once were normal men and normal women. Then there were those whose lives developed against a background of confusion; hereditary taints, moral crimes, other causes and no causes at all.

*I stood and faced them. There they are, living in a nonexistent world, divergent in mood and purpose, like the men and women living in a world of reality, sighing and weeping, laughing and dancing, planning and scheming, accumulating and spending imaginary millions; many with congeries of interest, others with no interest at all. The tiny spark of the nor-*

*mal was a monstrous blaze that they fought to extinguish, with defeat inevitable.*

I always knew that the physical and emotional states are closely coordinated, the coordination being brought about by the endocrine glands and the autonomic nervous system. But I never knew and do not now, whether personality is determined by hereditary endowments, or by environmental conditions.



Here is John Thomas Audrey. His environments were ideal. His forebears for generations were sound physically and mentally. No insanities and no prodigies. From early childhood he had no problems, and no conflicts. What brought about his violent insanity? He certainly had no inability to meet social or economic demands. There were no somatogenic factors. What caused the elation, the overtalkativeness and overactivity? For days and nights at a time he quips and laughs and almost never stops talking. Mostly his speech is incoherent. As I stood facing him he was Emperor of Brazil. That Brazil is now a Republic was none of his business. I have seen powerful beasts of prey

becoming exhausted in the struggle to escape. John Thomas Audrey never tires.

Next to him was the Emperor of Japan. Fred Tilden is his name. Once he was in that country and he evidently absorbed the mental climate of the East, for he bowed and swayed as do the Japanese. "Who," I asked, "informed your Majesty that you are the Emperor?" He assumed a serious mien as he answered: "Our Lord and Saviour, Jesus Christ told me so." From the next cell came a loud and angry voice: "He is a goddam liar. I never told him that."

Here is Mark Gallagher with depressive psychosis, with downcast face, refusing food and drink, weeping, wringing his hands, or sitting motionless. Not once did he raise his eyes when I attempted to talk to him. His attacks have periodicity. Between the attacks he is a perfectly well and pleasant man. In his sanity he told me of a middle-aged man who, he said, has suicidal tendencies. Why? Well, if I see his wife, I'll know the reason. But why did he marry her? She was earning fifty dollars a week. Now she lost her job.

And there were the syphilophobics, the claustrophobics, and the agrophobics. There were men with anxiety neuroses and some with compulsive ideas. A Mrs. Goodwin never stopped washing her hands, because someone touched her hands, and there was the obsession of contamination. The schizophrenics and the paranoiacs, and the alcoholic psychotics. Those with hallucinations of sight and hearing and smell. And those with disorders of idea associations. Withal it is a terrible world that I was in. Incarcerate a normal man among those abnormals, and he too would become mentally unbalanced. I must have looked depressed. A visitor called to the guards, pointing at



# penicillin —CUTTER

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Crystalline salt of procaine penicillin G in a base of aluminum monostearate in sesame oil. Supplied in 1cc. and 10cc. vials—300,000 units per cc. Can be stored at room temperature for 12 months.

**® No. 2—4-DAY HYPERCILLIN\***

Micronized crystalline salt of procaine penicillin G in a special water-repellent base of 2% aluminum monostearate in peanut oil. Supplied in 1cc. and 10cc. vials—300,000 units per cc. Also, Cutter disposable syringe containing 1cc.—300,000 units. Can be stored for 12 months at room temperature.

**® No. 3—WATER SOLUBLE PENICILLIN**

Crystalline potassium penicillin G in rubber-stoppered vials. Supplied in 100,000; 200,000; 500,000 and 1,000,000 units. Can be stored 36 months at room temperature.

**® No. 4—AQUEOUS PROCAINE PENICILLIN**

300,000 units procaine penicillin G, and 60,000 units buffered crystalline potassium penicillin G per cc. Supplied in 5 dose bottle. Can be stored for 12 months at room temperature.

**® No. 5—PENICILLIN ORAL TABLETS**

Crystalline potassium penicillin G tablets buffered with calcium carbonate. Supplied in vials of 12, 25, 100 in 50,000 unit tablets and 12, 100 in 100,000 unit tablets. May be stored up to 18 months at room temperature.

**® No. 6—PEN-TROCHES\***

Crystalline potassium penicillin G troches massed without water. Supplied in moisture-proof vials of 20 troches—1,000 units and 25 troches—5,000 units.

**® No. 7—PENICILLIN FOR INHALATION—CUTTER**

Crystalline potassium penicillin G micronized. Supplied in packages containing 3 cartridges (100,000 units each) and 1 Cutter penicillin inhalation unit for administration.

**specify — CUTTER**

To fill your penicillin requirements. Ask your nurse to write for the handy index file cards describing Cutter's complete line of penicillin products. Cutter Laboratories, Dept. C66, Berkeley 10, California.



me: "Get him. That guy is getting away." The visitor was told that I am a visiting physician. "Gosh," I heard him remark, "you must never judge a man by appearance."

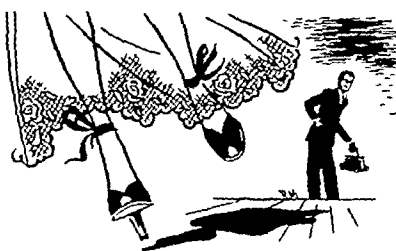
\* \* \*

February 5 . . . Maybe you would stop grappling with persistent problems and not follow any pattern of thought if you were in the hotel where I was one hour ago. For you would gaze at a magnificent form of supreme beauty in a transparent gown, and her beautifully formed arms would stretch out to embrace you. Don't envy me. You can have her, if you like. Coquettishly she spoke: "Oh, you are such a dear. Tell me how do you like my barbed wire gown? Why do I call it barbed wire? Oh, you silly boy. Don't you see? It protects your property and does not obstruct the view."

I demanded to know why I was sent for. She ignored the question. Instead she asked: "What do you think I would do, if you would try to kiss me?" I shrugged my shoulders. "Would you like to find out?" I'll wager that under such conditions, someone else would be rendered unfit for serious thought. Yet the more I gazed at her the more dehumanized she appeared—an artistic piece of a toy, ready to become a play in the hands of anyone, if he can furnish the morphine for which she craved.

She succeeded in putting her arms around me, asked if I was married, and if I loved my wife, then ran in the bathroom and locked the door. I left the room hurriedly. At my next stop, I discovered that my vial of morphine of almost one hundred tablets and my hypodermic syringe were gone.

I was thinking of that sublime, yet degraded specimen of femininity. A morphia addict. There were certainly no signs of physical degradation. She surely was not



slovenly in appearance, nor did she show demonstrable effects of malnutrition. "I have yet to see a really cured addict. . . ."

The entrance of Frank Luther disrupted my thoughts. He came to have a premarital blood test. "Didn't you tell me," I asked, "that you were to break off your engagement?" He scratched his bald head. "It's this way, you understand. Beatrice grew so fat, she could not take the engagement ring off her finger. I would lose, well, I paid in two hundred dollars. Well, I could have married Evelyn. So, I would have to spend two hundred dollars more, and I tell you there is no four hundred dollars difference between them."

\* \* \*

February 12 . . . Sat in a restaurant with colleague Maureen and discussed a case of precocious sexual development in a boy of 16. He had a great exaggeration of primary and secondary sexual characteristics and a constant craving for sexual gratification. By persuasion and a bribe he submitted to a physical examination. The precociousness was found due to a testicular tumor. He vanished the moment he heard the mention of operation.

The waiter's bringing the food ended our discussion. "I ordered a steak," protested Dr. Maureen, "where is it?" The waiter smiled derisively. "Pick up the potato, and you'll find the steak. What do you expect for a dollar?"

Lawyer Sherman came in with

his wife, greeted us, and occupied the table next to us. A blonde, well known in the neighborhood, called to the lawyer. "Hello, there, how are you?" "Oh," explained the legal light to his wife. "I had some professional dealings with her." The wife looked penetratingly at him. "Whose profession? Yours or hers? Was that the form you telephoned to me that you were working on?"

\* \* \*

February 19 . . . Bachelor maiden Ruth Ramsay has an adopted son of 16. Her uterine bleeding puzzled and distressed me. How am I to have a biopsy of the endometrium done for her? Will she allow her virginity to be done away with? As I sat and pondered, she entered my consultation room and smiled pleasantly. She must have read my thoughts. She looked around carefully, and whispered in my ear: "That son of mine is not adopted." Then she added seriously: "Swear that you will not betray that confidence I just placed in you." I retorted angrily, that doctors never abuse confidence. She laughed mordantly. "Who do you think is the father of that boy of mine? A doctor, yes, a married doctor, whom I trusted. Oh, no. He didn't rape me. But he made me lose myself. Now you see why I am suspicious of doctors?"

\* \* \*

February 20 . . . Mrs. Pearson is more 70 than 60. Her pain in the lower thoracic region and upper abdomen was excruciating. Her case was diagnosed as pleurodynia. Dr. Denmore demonstrated her case on his rounds and told his listeners that the disease occurs almost exclusively in the young. Her face glowed with happiness. Not a word of complaint. Her time is being spent by viewing herself in the hand mirror.

I asked why her husband does



not come to see her. "Who needs that old—. You know he is exactly like that Chinese president, what's his name, Kai Chai something. He sent his wife here to get money when he was broke. My husband sends me to work when he is broke. That's how I caught my cold, looking for a job. Fool. They say first came the man, and after him came the woman, and she has been after him ever since. Not me." And my faith in psychosomatic medicine became still stronger.

February 24 . . . Met Dr. Hallo-way on the street. Said he: "Say, did you see that case of intestino-vesical fistula, the fistula between the intestinal tract and the urinary bladder?" Eccentric Mr. Roden Ottenheimer approached us. "Did you gentlemen," he asked, "read my letter in today's morning paper?" I said I did. "Well, how do you like my vocabulary? Good, isn't it? Do you know when I arrived in this country, I couldn't speak one word of English?" I asked: "Where did you come from?" "I was born here," he answered and walked off.

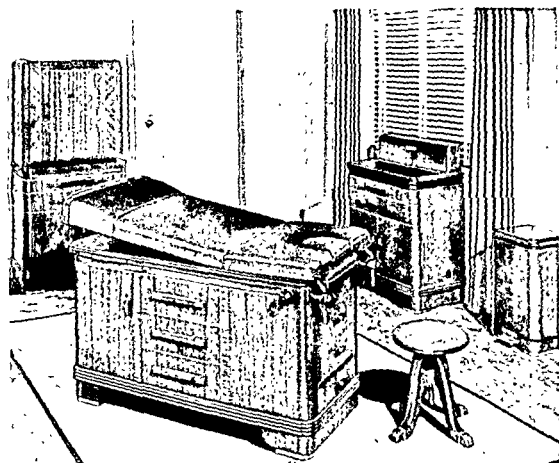
\* \* \*

February 26 . . . I thought that Bagley's fracture of the acetabulum in an accident one year ago healed completely. Today I saw him walking on crutches. "Yes," he ex-

plained. "The case ain't settled yet."

Followed the hearse of my life-long and devoted friend Dr. Ostro, whose passage from the vitality of life to the incomprehension and horror of death was sudden, and hence shocking to all of us. He died from a cerebral aneurysm, just as he reached the heights of success. His sudden demise saddened us all.

*There I stood, and observed the wide expanse of the cemetery. I looked at the graves, row on row, with cherished illusions, noble deeds, and abysmal evils buried under the tombstones. If men would only remember that the flame of life is eventually blown out, they would not come to grips with life, and would enjoy their short sojourn on this earth. Men would not flout moral responsibilities. . . .*



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1. Grinnell, E.: Journal-Lancet 68: 121 (1948).

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2. MacKee, G. M.; et al.: J. Invest. Dermat. 6: 43 (1945).

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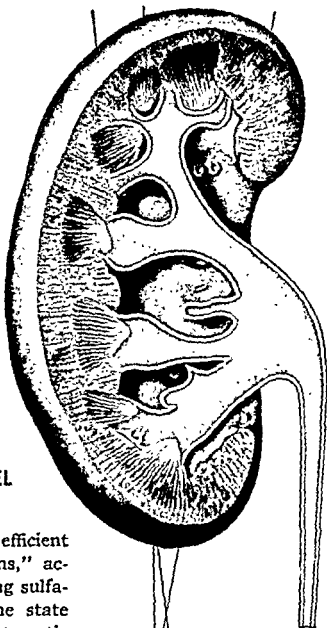
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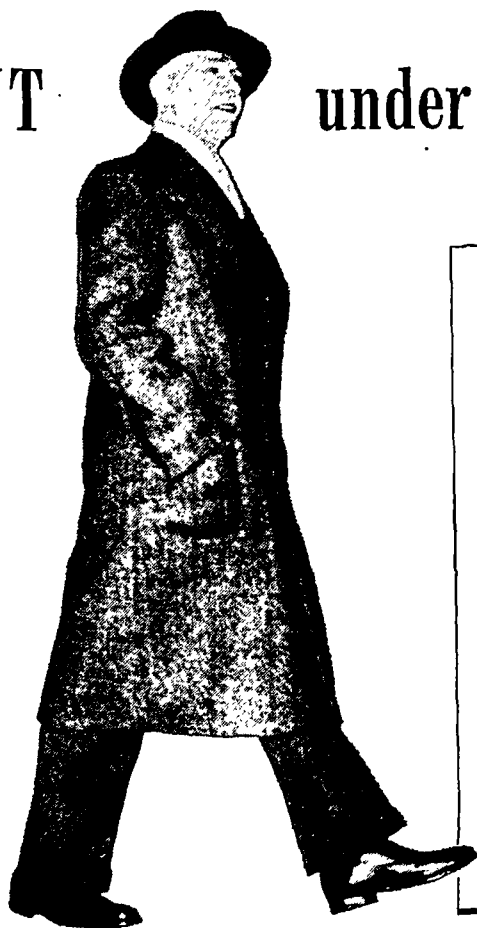


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# PATIENT

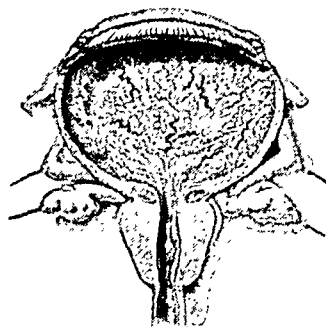
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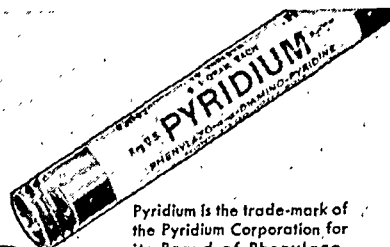
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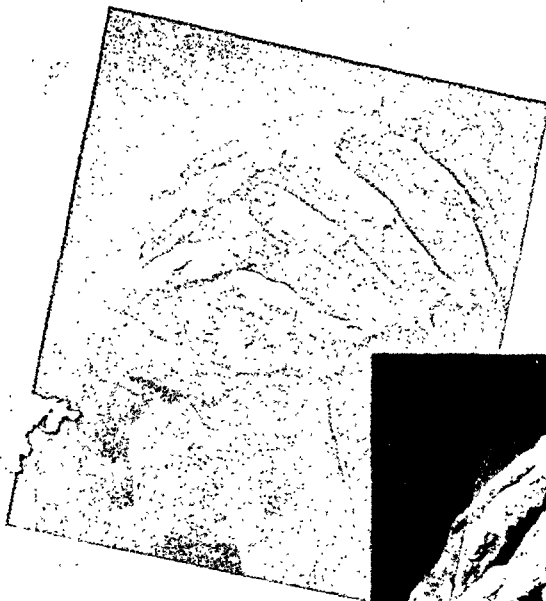
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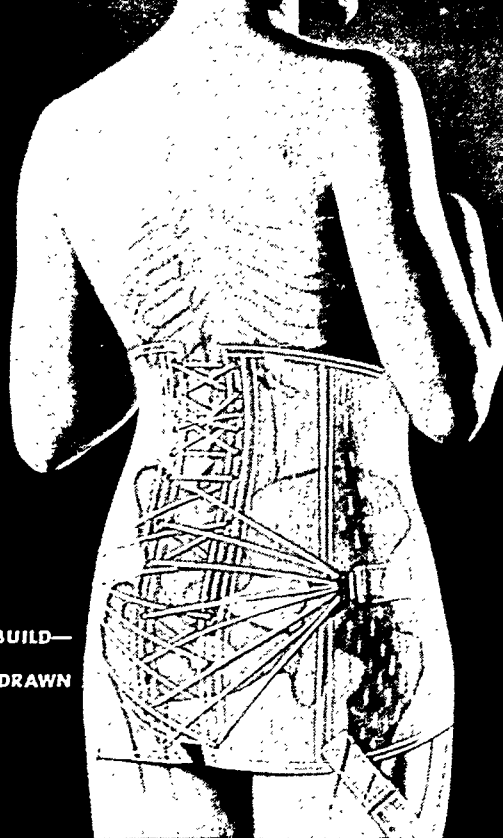
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\*Based on average reported values for milk.

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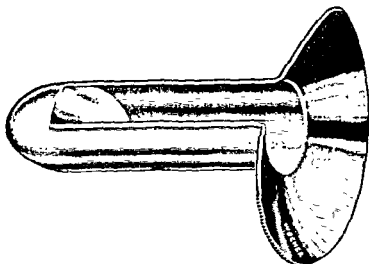
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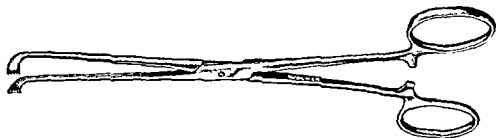
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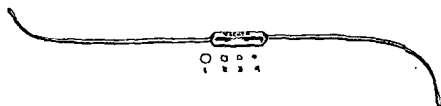
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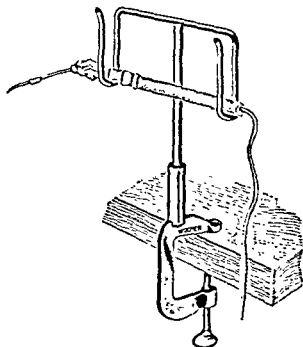
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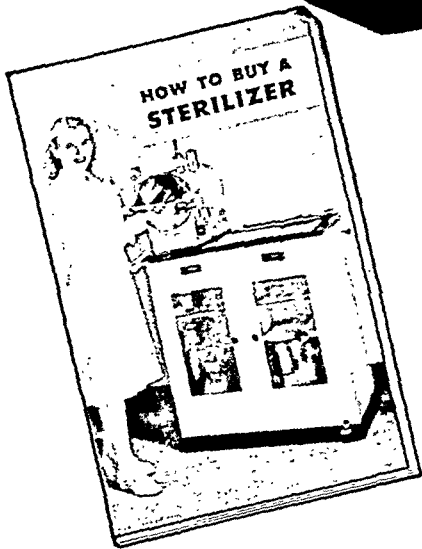
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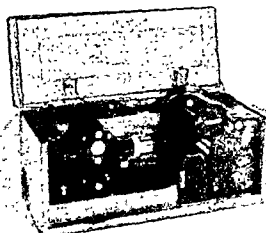
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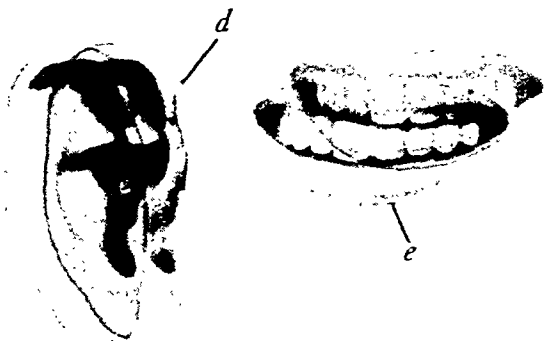
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## minimal risk of salicylism!

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REFERENCES: 1. Rosenblum, H. and Fraser, L. E.: Proc. Soc. Exper. Biol. Med., 65:178, 1947. 2. Dry T. J. et al.: Proc. Staff Meetings, Mayo Clinic, 21:497, 1946. 3. Belisle, M.: Union Med. Can., 77:392, 1948. 4. Dorfman, A. et al.: Proc. Soc. Exper. Biol. Med., 64:357, 1947.

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USES: Rheumatoid arthritis; rheumatic fever; fibrositis; gout, osteo-arthritis.

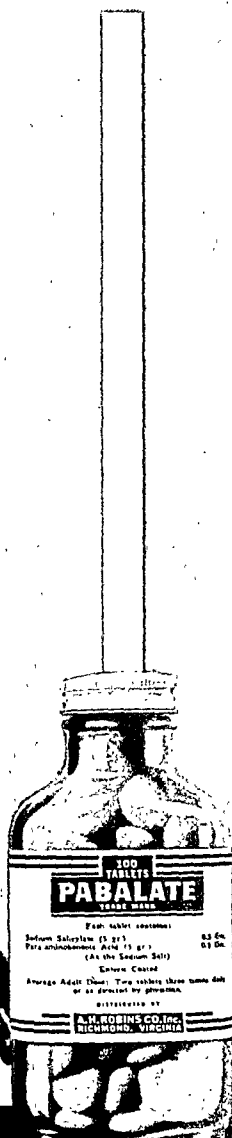
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FORMULA: Each enteric-coated tablet contains Sodium Salicylate, U.S.P. (5 gr.), 0.3 gm.; Para-aminobenzoic Acid (as the sodium salt) (5 gr.), 0.3 gm.

SUPPLIED: In bottles of 100 tablets.

*For Arthritic Affections*

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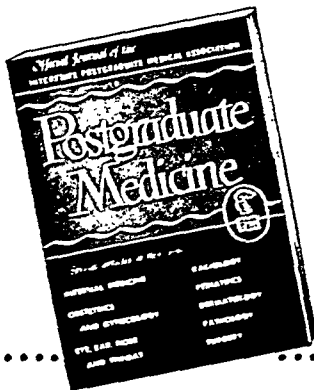


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<sup>1</sup> McLester, J. S.: Nutrition and Diet in Health and Disease, ed. 4, Philadelphia and London, W. B. Saunders Company, 1943.

<sup>2</sup> Kunde, M. M. The Role of Hormones in the Treatment of Obesity, Ann. Int. Med. 28:971 (May) 1948.

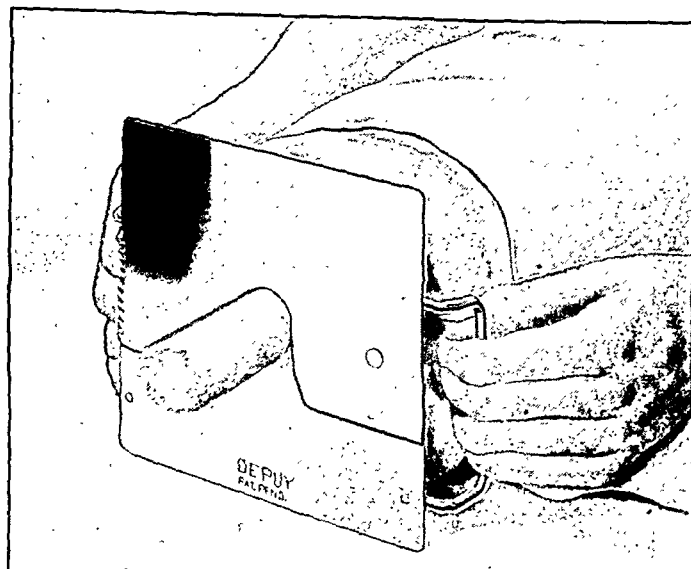
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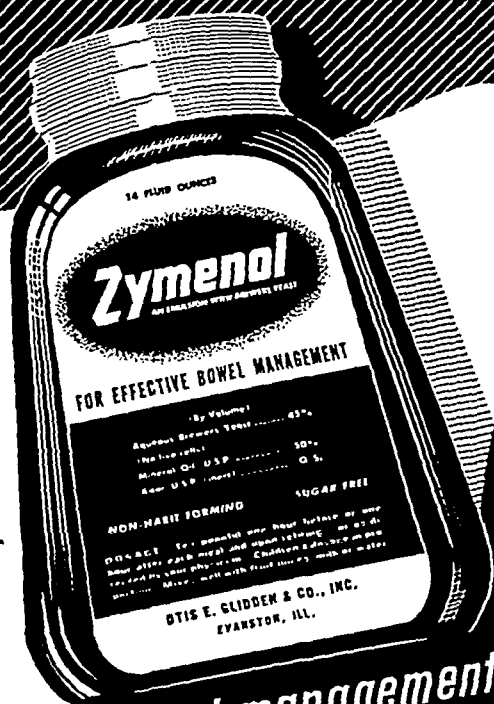
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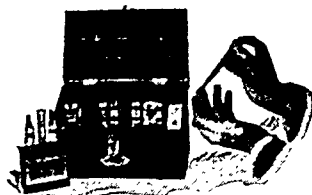
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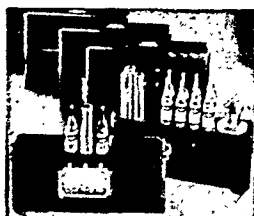
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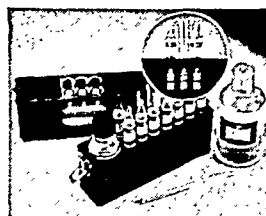
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#### REFERENCES:

1. J. Pediat. 32:1 (1948).
2. Am. J. M. Sc. 213:513 (1947).
3. J. Pediat. 32:119 (1948).
4. New England J. Med. 236:817 (1947).
5. New York State J. Med. 48:517 (1948).
6. Lancet 1:255 (1947).

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1. Grollman, A.: *Essentials of Endocrinology* (Lippincott—Phila., 1944).
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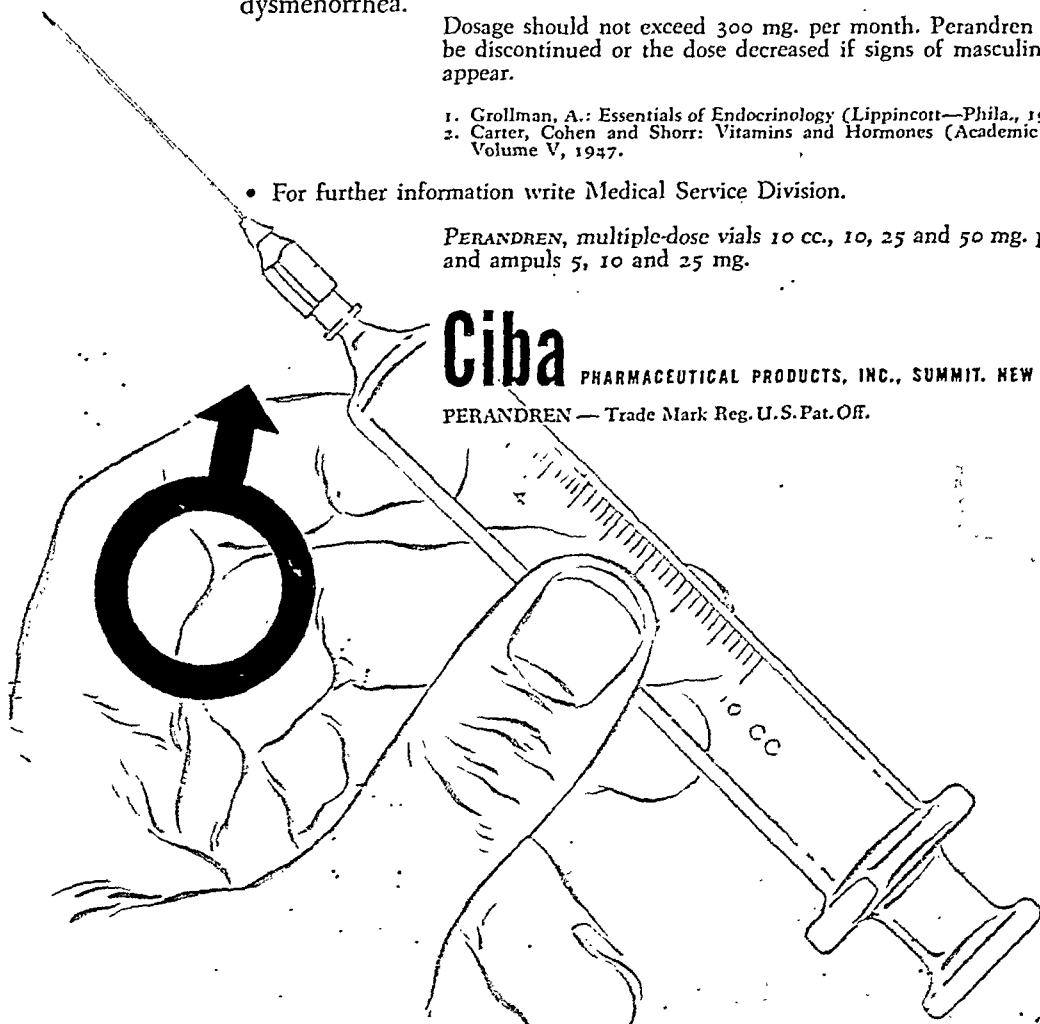
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## Table of Contents

VOL. V, No. IV

### *Special Articles*

DIAGNOSIS AND TREATMENT OF TRICHINOSIS. Sylvester E. Gould, M.D. . . . .	257
SELECTION OF CASES FOR LEMPert FENESTRA NOV-OVALIS OPERATION. Julius Lempert, M.D. . . . .	270
DYNAMIC THERAPEUTICS IN CHRONIC DISEASE. Howard A. Rusk, M.D. . . . .	278
LUNG PATHOLOGY AND HEMOPTYSIS IN CHILDREN; Effect of Non-Opaque Foreign Bodies. Paul I. Mahoney, M.D. . . . .	288

### *Diagnostic Clinics*

DIAGNOSIS AND TREATMENT OF DIGESTIVE DISEASES. Waltman Walters, M.D. . . . .	295
THE TREATMENT OF HEMATOLOGIC DISORDERS. Cyrus C. Sturgis, M.D. . . . .	300
DIAGNOSIS AND TREATMENT OF GALLBLADDER DISEASE. Warren H. Cole, M.D. . . . .	307

### *Scientific Exhibit*

THE THERAPEUTIC USES OF PENICILLIN AEROSOL; The Application of Nebulized Penicillin and Other Aerosols in Broncho-Pulmonary Disease. Alvan L. Barach, M.D., Bettina B. Garthwaite, M.D., and Hylan A. Bickerman, M.D. . . . .	314
---	-----

### *Experimental*

CAFERGONE FOR RELIEF OF HEADACHE. Robert E. Ryan, M.D. . . . .	330
---	-----

### *Departments*

THE MEDICAL BOOKMAN. <i>Psychiatry in General Practice</i> • New Books Received . . . . .	331
EDITORIALS. <i>Sensitivity to Chemotherapeutic and Antibiotic Agents</i> • <i>Chronic Coronary Disease</i> . . . . .	337
WILLIAM Worrall Mayo—"I Started All This." J. L. Burn, M.D. . . . .	340
CONSULTATION SERVICE. <i>Pernicious Anemia of Pregnancy</i> • <i>Ringworm Infection</i> • <i>Penicillin for Rheumatic Fever</i> • <i>Ulcerative Colitis</i> • <i>Differential Diagnosis of Acute Appendicitis and Renal Colic</i> • <i>Bell's Palsy</i> • <i>Treatment of Pneumonia in Children</i> • <i>Treatment of Spasmodic Croup</i> • <i>Twitching Eyelid</i> . . . . .	341
NEW DRUGS AND INSTRUMENTS . . . . .	346
LEAVES FROM A DOCTOR'S DIARY. Maurice Chideckel, M.D. . . . .	349
MEDICAL NEWS ROUND-UP . . . . .	A-9

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# Medical News Round-Up

## ORGANIZATIONS AND INSTITUTIONS

Yale University Graduate School and School of Medicine combine personnel and facilities to form a new department of microbiology, offering opportunity for advanced interdepartmental study and research in this field. . . . Affiliation of the proposed Hunterdon County (New Jersey) Medical Center as a member of the New York University-Bellevue Medical Center's regional hospital plan is announced as a unique partnership between a rural medical center and a metropolitan university-connected medical center. . . .

Research grants totaling \$11,100 are made to the University of Illinois College of Medicine by the Mallinckrodt Chemical Works, the Josiah Macy, Jr., Foundation and Swift and Company, financing study of alkyl carbonates in pharmacology, carbohydrate metabolism in mental disease, and amino acids as related to nutrition. . . . Dr. George E. Gardner delivers the final laity lecture of the New York Academy of Medicine's 1948-1949 series, speaking on methods of dealing with delinquency. . . .

Albany Medical College, Albany, New York, opens a Cancer Detection Center, offering diagnostic services to apparently symptom-free men and women of 35 or older. . . . Thirty-three new study section consultant experts are appointed for the National Institutes of Health by Surgeon General Leonard A. Scheele to replace consultants whose terms expired. Study section members meet periodically to evaluate applications for grants to support research projects at non-Federal institutions. . . . The Armed Forces Medical Advisory Committee recommends a drive to recruit volunteers for the Army, Navy and Air Force from among physicians and dentists who received all or part of their education at government expense, or who were deferred from service because of their status as medical or dental students. . . .

Public Health Education Section of the American Public Health Association names Helen A. Martikainen, State Board of Health, Raleigh, North Carolina, as chairman and votes to support development of health education work through regional groups. . . . The Robert Gould Research Foundation grants \$4,000 for research in nutrition by Dr. C. A. Elvehjem of the University of Wisconsin, to study use of amino acids as sole source of protein in diet. . . .

A \$10,000,000 institution, the National Cancer Hospital of America, is scheduled for opening in Detroit late in 1951, with a large share of the building funds already obtained through gifts. The hospital will be nonsectarian and national in scope, Loretta Mary Gibson, founder of Mercy Hall Hospital and secretary of the underwriting group for the new institution, emphasizes. . . .

American Psychosomatic Society announces its sixth annual meeting to be held April 30 and May 1 in Atlantic City. . . . First public health center built with federal aid is opened in Birmingham, Alabama, housing offices of the Jefferson County Board of Health, Alabama state labora-

tories, Birmingham City Health Department, and voluntary agencies. . . . Industrial Physicians and Surgeons of the United States and Canada hold their annual, week-long meeting in Detroit in early April. . . .

Grants of \$209,838 by the National Cancer Institute are made for 18 research projects at the following institutions: Illinois Wesleyan University, University of Illinois, Boston University School of Medicine, Harvard College, Tufts College Medical School, University of Michigan, University of Minnesota, University of Buffalo, Memorial Hospital (New York), New York University, Syracuse University, Institute for Cancer Research (Philadelphia), Temple University School of Medicine, Medical College of Virginia and Faculty of Medicine, Université de Montreal. . . .

The University of Minnesota's school of nursing opens its basic professional nursing course to qualified men students, starting with enrollment next fall. . . . Close cooperation is set up between the new Veterans Administration hospital in Houston, Texas, and Baylor University Medical School, with a Dean's committee appointed by the school to work with VA in maintaining medical standards. . . .

Fifty years of work by Britain's National Association for Prevention of Tuberculosis will be marked at the Commonwealth and Empire Health and Tuberculosis conference, scheduled for July 5-8 in London. . . .

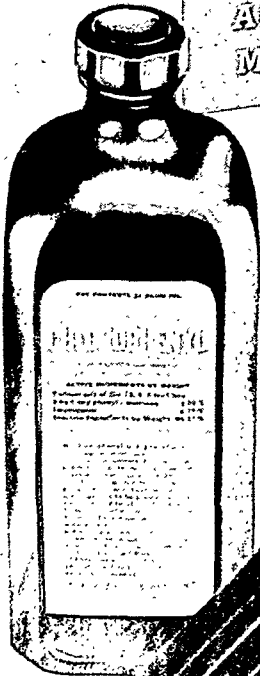
Funds allocated for research and educational projects by the National Foundation for Infantile Paralysis for 1949 now total \$2,565,159, with additional grants to be made later in the year. The greater share of the funds will be devoted to research including one sum of \$1,370,160 allotted for a three-year, coordinated effort at four universities to determine the number and characteristics of polio viruses which can produce human diseases. Working on separate but related phases of the problem will be teams at the University of Southern California, the University of Kansas, the University of Utah, and the University of Pittsburgh. . . . The American Association of Railway Surgeons sets its annual meeting for June 30-July 2 at the Drake hotel in Chicago, with symposiums scheduled on lesions of the bones and joints and intrathoracic disorders. . . .

The University of Louisville announces establishment of the Alben W. Barkley Chair of Medicine, to be devoted to research in heart diseases. Funds for the first work came from the \$10,000 Collier's Award which Vice President Barkley turned over to the university last year for use in heart disease research. . . . The new \$1,750,000 Institute for Cancer Research at Fox Chase in suburban Philadelphia is set for public opening in April. . . . Medicine in Industry is inaugurated as an undergraduate course for third-year students at the New York University College of Medicine, with a twelve-week series of lectures by experts in the field. . . . The American Association for the Surgery of Trauma sets its annual meeting for June 2-4 at Atlantic City. . . .

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Per Gallon . \$5.00  
Per Quart . \$1.75

### Check these additional features—

- Non-injurious to metallic instruments or keen surgical edges.
- Low volatility . . . will not irritate eyes, nose or throat.
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*Compare the killing time of this superior bactericidal agent*

Vegetative Bacteria	50% Dried Blood	Wt
Staph. aureus	15 min.	
E. coli	15 min.	
Strept. hemolytic	15 min.	

**A BARD-PARK**

# AMERICAN ACADEMY OF GENERAL PRACTICE ENDORSES A.M.A. PROGRAM



Dr. Lowell Goin, Los Angeles, addressing the meeting of the A.A.G.P.



Dr. and Mrs. Joseph Linder, Cincinnati, chairman of local arrangements committee and chairman of ladies' entertainment committee, respectively.



Dr. Paul A. Davis, Akron, immediate past president of A.A.G.P.

Pledging full support of the program of the American Medical Association to combat compulsory federal health insurance, the American Academy of General Practice, at its first assembly in Cincinnati March 7-9, went on record as approving the twelve-point program and the \$25 per member assessment of the A.M.A.

In addresses before the opening session of the Congress of Delegates, Dr. Rufus B. Robins, of Camden, Arkansas, speaker of the Congress, and Mac F. Cahal, executive secretary and general counsel of the Academy, were emphatic in their condemnation of the Government's proposals on medical care and strongly urged cooperation of the medical profession with the American Medical Association's campaign.

By unanimous vote, the Congress of Delegates opposed "any form of compulsory federal health insurance." The delegates declared themselves in favor of prepaid medical care on a voluntary basis, but believed the cost of such care would be reduced, its availability increased, and its quality improved if each individual and family had a "family doctor," who would serve as their personal medical guide and health adviser.

Other resolutions passed by the Congress included the recommendations that the American Medical Association be the sole agent authorized to rate hospitals and to standardize and regulate medical and surgical practices training programs, and that the establishment of a section on general practice be "considered in departmentalized, general hospitals, in which specialists represent a portion of the total membership of the medical staff, the section on general practice to be established within the structure of the Active Medical Staff."

Dr. Paul A. Davis, Akron, Ohio, retiring president of the Academy, was succeeded by Dr. Elmer C. Texter of Detroit, Michigan. President-elect for 1950 is Dr. Stanley R.

Truman of Oakland, California. Other officials of the group are: Dr. Jason P. Sanders, Shreveport, Louisiana, vice president; Dr. U. R. Bryner, Salt Lake City, Utah, treasurer; Dr. R. B. Robins, Camden, Arkansas, speaker of the Congress of Delegates; Mac F. Cahal, Kansas City, Missouri, executive secretary and general counsel.

Members of the Board of Directors are: Dr. Lester D. Bibler, Indianapolis; Dr. Robert M. Lemmon, Akron; Dr. Arch Walls, Detroit; Dr. H. T. Jackson, Fort Worth; Dr. G. Marchmont-Robinson, Chicago; Dr. D. G. Miller, Jr., Morgantown, Kentucky; Dr. F. G. Benn, Minneapolis; Dr. J. P. Sanders, Shreveport; and Dr. R. C. McElvain, St. Louis.

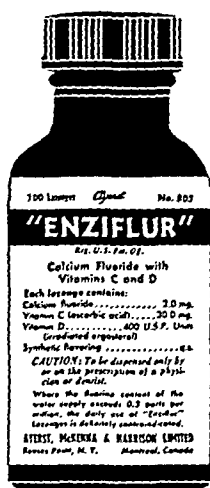
• • •

A new \$3,000,000 laboratory building of the Sterling-Winthrop Research Institute at Rensselaer, New York, will be ready for occupancy in June, with formal opening to be held later in the year. . . . Faculty and alumni of Northwestern University Medical School set May 14 for their annual reunion dinner at the Lake Shore Club in Chicago, with Dr. Frederick W. Merrifield as principal speaker. . . .

"Communicable Diseases," a 16 mm. color and sound motion picture is made available for showing to medical groups by Cutter Laboratories, Berkeley, California. The film was made in the isolation hospitals at Los Angeles, San Francisco and Oakland and incorporates some examples of diseases never before recorded on film. . . .

The physical therapist recruitment program of the National Foundation for Infantile Paralysis is now being handled by the American Physical Therapy Association, and requests for emergency physical therapists should be directed after May 1 to the APTA, 1790 Broadway, New York 19. . . .

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prevention  
of  
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to dissolve slowly in the mouth to bring the fluoride-bearing saliva  
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Descriptive literature outlining indications, dosages and  
contraindications available to dentists upon request.

\*approximately 1 mg. fluorine

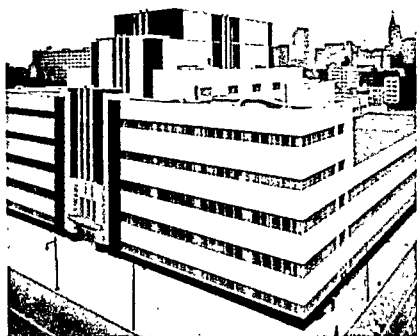
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#### SMITH, KLINE & FRENCH LABORATORIES OPENS NEW BUILDING

In connection with the opening of the new building of Smith, Kline & French Laboratories in Philadelphia, on March 16th, the company sponsored a Medical Research Conference on "The Clinical Problems of Advancing Years," with addresses and discussions by a specially invited group of speakers.

The keynote address by Dr. Edward J. Stieglitz, attending internist, Suburban Hospital, Bethesda, Maryland, was followed by a panel on Cardiovascular Conditions in which the participants were: Dr. Eugene A. Stead, Jr., Duke University School of Medicine; Dr. Arlie Ray Barnes, Mayo Clinic; Dr. George E. Burch, Tulane University School of Medicine; Dr. Harry Gold, Cornell University Medical College, and Dr. Robert W. Wilkins, Boston University School of Medicine.

Other sessions were devoted to Television in Medical Education, a panel on Overweight, and address on Outlook for New Drug Therapy in Geriatrics. Speakers for this section of the program were Dr. Morris Fishbein, Editor, *The Journal of the A.M.A.*, and Dr. Edwin J. Felloes and Dr. Richard A. McLean of the Smith, Kline & French Laboratories, the latter handling the television demonstrations; Dr. Andrew C. Ivy, U. of Illinois; Dr. L. H. Newburgh, U. of Michigan Medical School; Dr. Edward Rose, U. of Pennsylvania School of Medicine; Dr. Edward H. Ryerson, Mayo Clinic; Dr. Robert H. Williams, U. of Washington School of Medicine, and Dr. Chauncey D. Leake, U. of Texas.

#### PROGRESS IN MEDICAL SCIENCE

More of the public are coming to regard emotional conflicts as ailments requiring medical care, Dr. Kenneth E. Appel reports, on a basis of experience at the University of Pennsylvania's new Clinic for Functional Disease. The

increasing number of ambulatory patients in a six-month record of 4,000 psychiatric visits is cited to indicate public acceptance of the need for this type of treatment. . . . Research scientists from all parts of the country were scheduled to report advances in antibiotic research at the second national symposium under auspices of the Antibiotics Study Section of the National Institutes of Health on April 11 and 12 at Washington, D.C. . . .

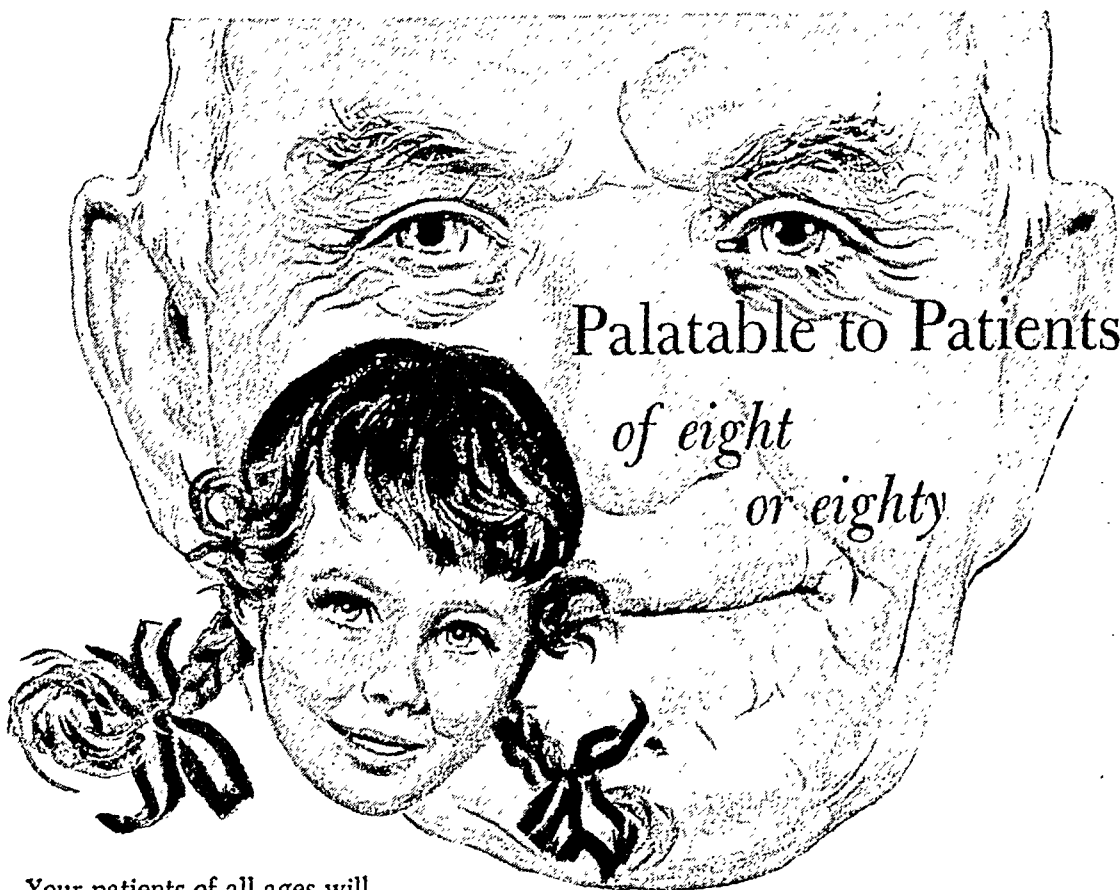
Arrangements are completed for a demonstration of television in natural color for the teaching of surgery and medicine at the American Medical Association's annual meeting in June at Atlantic City. Smith, Kline and French Laboratories will cooperate with the University of Pennsylvania in putting on the demonstration, with equipment pioneered by Columbia Broadcasting System, Zenith Radio Corporation, and Webster-Chicago Corporation. . . . Surgery, medicine and public health will be surveyed by Dr. Paul R. Hawley in the second series of Bampton Lectures in America at Columbia University, beginning May 9. . . .

The Army Medical Department reports development of a new drug, *Dramamine*, as a preventive and cure for seasickness and motion sickness. Original research is credited to Dr. Leslie N. Gay and Dr. Paul Carliner. *Dramamine* is described as a single chemical belonging to the benadryl and pyribenzamine group and having a direct effect on the vomiting center of the brain. . . . A "battle against blindness" is launched by the National Society for the Prevention of Blindness in a national conference of medical, public health, industrial and educational workers, marking forty years of service by the organization. . . .

Need for a comprehensive program for the care of the chronically ill and aged is stressed by Surgeon General Leonard A. Scheele. Aging of the American population brings a shift in the nation's health problem, he points out, with the expectation that by 1975 nearly 11 per cent of the population will be 65 or older. . . . Medical aspects of special weapons and radioactive isotopes are explored in a five-day course for Naval Reserve officers at the Naval Medical School, Bethesda, Maryland. . . . Publication of the booklet, *Your Child from Six to Twelve*, by the U.S. Children's Bureau, completes the bureau's series of five bulletins for parents on child care, from the prenatal period through adolescence. . . .

Dr. Arnold Gesell of the Child Vision Research Department, Yale University School of Medicine, presents results of his investigations in connection with Sigma Xi National Lectureships in addresses at 24 colleges, universities and other institutions. . . . *The Survey* presents the case for animal experimentation in an article entitled, "Unsung Heroes of Medicine." . . .

The lowest infant mortality rate on record is announced for the year 1947 by the U.S. Public Health Service, and tentative figures indicate a further decrease in the rate for 1948. Deaths of infants under 1 year in 1947 were 32.2 per 1,000 live births, compared to 33.8 for 1946. The estimated rate for 1948 is 31.8. . . . Progress on four medical research fronts, in the fight against malaria, the management of amebiasis, in analgesics, and in the sympathomimetic amines, is described by Dr. Maurice L. Tainter, director



Your patients of all ages will like VYTINIC, Bristol's liquid hematinic with folic acid. A clear, transparent solution, it is pleasing to the eye, and exceedingly well tolerated. But most important, VYTINIC's exceptional appeal to a finicky palate ensures your patients' co-operation.

The approach of VYTINIC to the treatment of secondary anemia is modern and comprehensive—providing in balanced proportions essential factors certainly deficient in hemorrhagic anemia and frequently deficient in anemias of nutritional origin.

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**Each fluidounce contains:**

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Thiamin Hydrochloride (Vitamin B <sub>1</sub> ).....	10 mg.
Riboflavin (Vitamin B <sub>2</sub> ).....	4 mg.
Niacinamide.....	100 mg.
Liver extract derived from 20 Gm. of fresh liver	
Folic Acid.....	2 mg.

Available for your prescription in bottles of 12 oz. and 1 gal.

Send for tasting sample.

**Dosage:** Adults—one tablespoonful, t.i.d., with or immediately after meals. Children—in proportion to their age. The suggested daily adult dose provides the following multiples of the minimum daily requirement for adults: iron—10; vitamin B<sub>1</sub>—15; vitamin B<sub>2</sub>—3; plus adequate amounts of niacinamide, liver extract, and folic acid.

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of eight  
or eighty

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Available for your prescription in  
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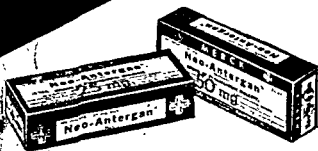
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Three major qualities  
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1.—Hansel, F. K.: Nethaphyl in the treatment of nasal allergy and bronchial asthma. *Ann. Allergy*, 5:397 (1947). 2.—Hansel, F. K.: Nethamine hydrochloride and theophylline isobutanolamine in the treatment of nasal allergy and asthma. *Ann. Allergy*, 1:199-207 (1943). 3.—Simon, S. W.: Nethaphyl in bronchial asthma. *Ann. Allergy*, 6:662-663 (1948).

CINCINNATI



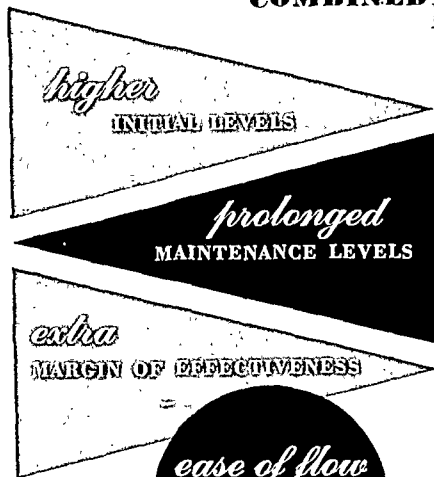
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Within a half hour or less after the injection, a high concentration of penicillin is found in the tissues.

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For twenty-four hours or longer, a single injection continues to provide effective therapeutic levels.

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Rapid onset and prolonged maintenance of higher levels means more effective antibacterial action than possible with penicillin in retardant vehicles.

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Higher levels quickly obtained permit early dominance over infecting organisms and diminish likelihood of penicillin-fastness.

## ease of flow

Penicillin S-R contains no oil, no wax, no added suspending or dispersing agents to impede injection or clog needle and syringe.

## additional advantages of PENICILLIN S-R

### PREPARATION:

Easily and quickly prepared  
Aqueous diluent  
No vigorous shaking

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Free-flowing  
Quickly injected  
No special-type syringe

### CONVENIENCE:

Syringe and needle need not be dry  
No plunging of needles (20 or 21 gauge)  
Syringe and needles easily cleaned

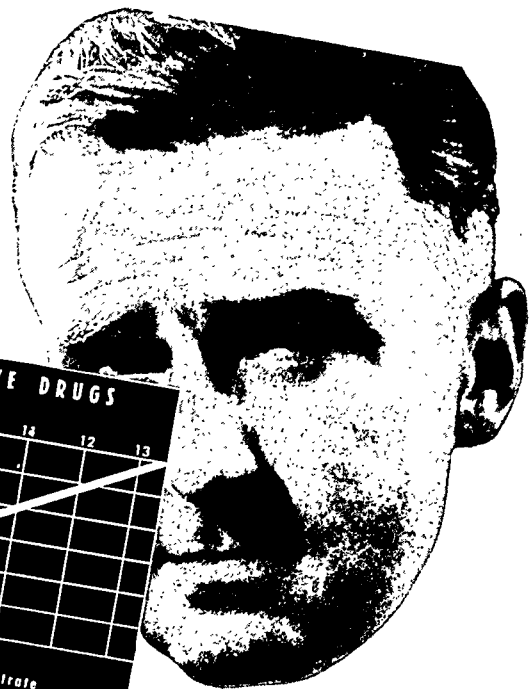
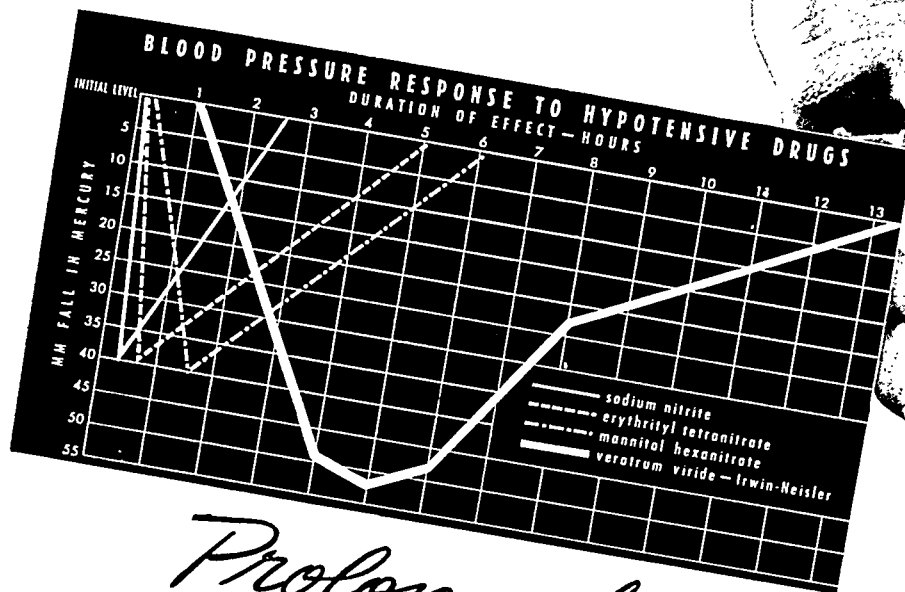
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Completely absorbed  
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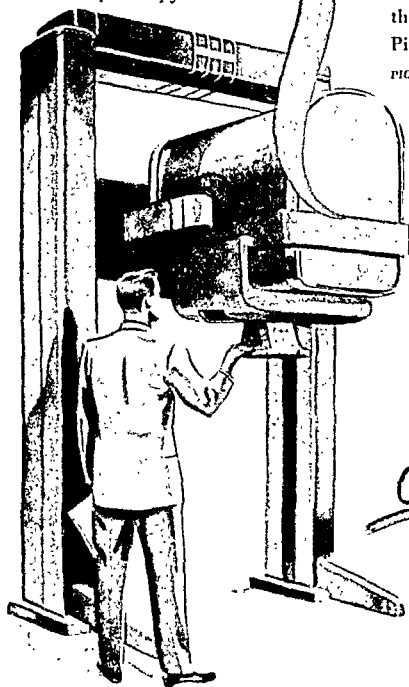
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relieves  
much of the distress  
of the menopause...  
by reawakening the  
patient's optimism  
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...by restoring her feeling of energy and  
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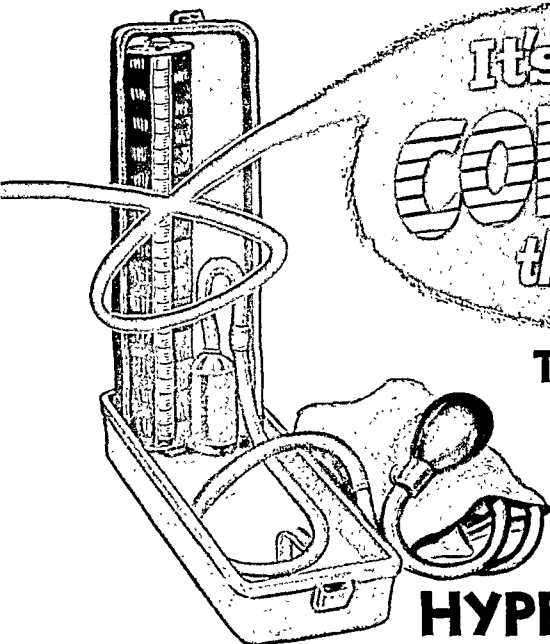
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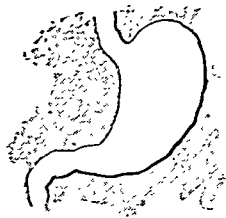
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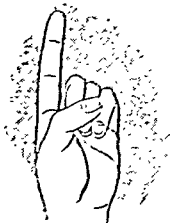
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with gastric hyperacidity  
because



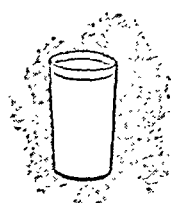
its efficacy and taste  
invite the cooperation of  
your patients.



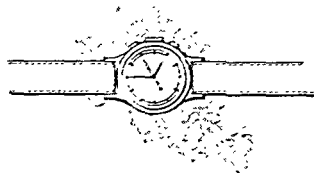
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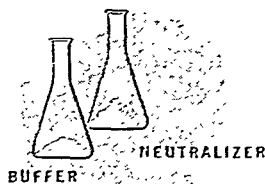
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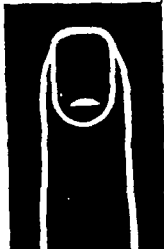
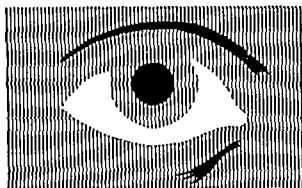


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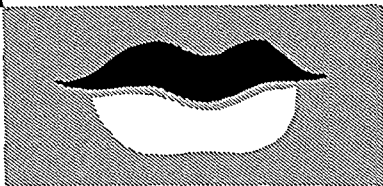
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*Recent important investigations confirm superiority of molybdenized ferrous sulfate in iron-deficiency anemia.*

---

Dieckmann, W. J., and Priddle, H. D.: Anemia of Pregnancy Treated with Molybdenum-Iron Complex, Amer. J. Obstet. & Gynecol., (March) 1949.

Dieckmann and associates recently undertook an evaluation of molybdenized ferrous sulfate (Mol-Iron) in anemia of pregnancy—a relatively resistant type of anemia.

A carefully selected group of patients was given Mol-Iron in a dosage of 2 tablets 3 times daily; a comparable group of patients who received no iron medication served as controls.

**FINDINGS:** "The patients who were treated showed a rapid increase in hemoglobin and hematocrit with a mean at term of 11.8 Gm. per 100 ml. and 36 volumes per cent—high figures for pregnant patients. The mean for the present control group is 10.7 Gm. of hemoglobin per 100 ml. and a hematocrit of 32.6 volumes

per cent (at term)... At six weeks post partum, the patients who had been on molybdenum-iron had a mean of 12.2 Gm. per 100 ml. as compared with 11.2 for the present (control) group . . ."

**COMMENT:** "We have never had other iron salts so efficacious in pregnant patients. Our results with the molybdenum-iron complex have been so striking that, if the patient has taken this medication for three weeks and shown no significant increase in the hemoglobin concentration, the therapy is stopped and a more extensive study (bone marrow biopsy, gastric analysis, reticulocyte count, etc.) made to determine the cause of the anemia."

**SUMMARY:** "We believe that the value of this molybdenum-iron complex has been demonstrated as being very effective in increasing the hemoglobin of pregnant patients who are anemic."

# ADVANCE IN ANEMIA THERAPY

Talso, P. J.: Anemia in Pregnancy, *J. Ins. Med.*, 4:31-34 (Dec.-Jan.-Feb.) 1948-1949.

"The encouraging results obtained with molybdenized ferrous sulfate in the microcytic hypochromic group indicate a better prognosis in these conditions in the future with a resultant improvement in maternal health generally."

Chesley, R. F., and Annitto, J. E.: Evaluation of Molybdenized Ferrous Sulfate in the Treatment of Hypochromic Anemia of Pregnancy, *Bull. Margaret Hague Maternity Hospital*, 1:68-75 (Sept.) 1948.

"... molybdenized ferrous sulfate produced a substantially more rapid therapeutic response than ferrous sulfate, the difference in response being statistically significant. Addition to ferrous sulfate of either liver-stomach extract or folic acid did not potentiate the action of the iron salt.

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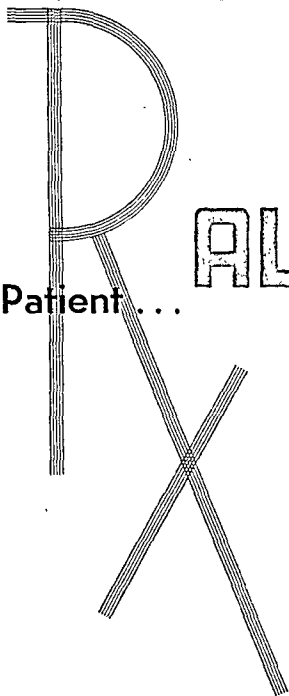
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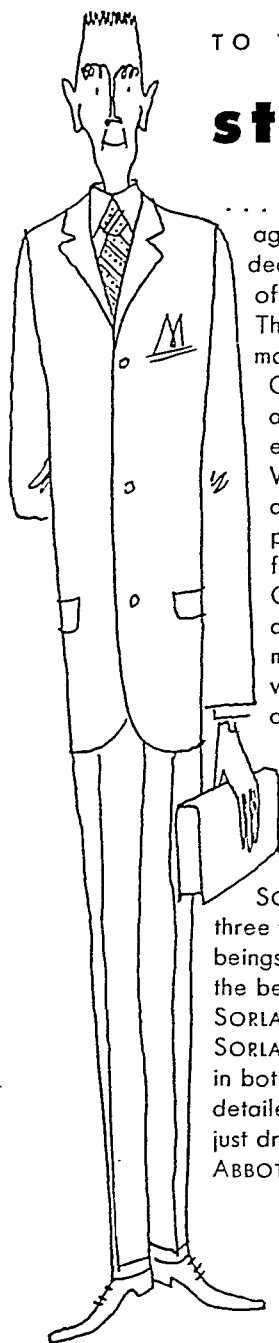
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SORLATE is supplied in 0.5-Gm. capsules in bottles of 100 and 1000. For more detailed information on SORLATE therapy, just drop a card to ABBOTT LABORATORIES, North Chicago, Ill.

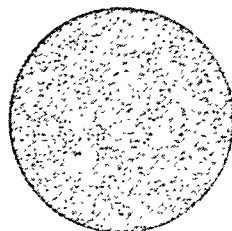
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I. Jones, C. M., Culver, P. J., Drummey, G. D., and Ryan, A. E. (1948), *Modification of Fat Absorption in the Digestive Tract by the Use of an Emulsifying Agent*, *Ann. Int. Med.*, 29:1, July.

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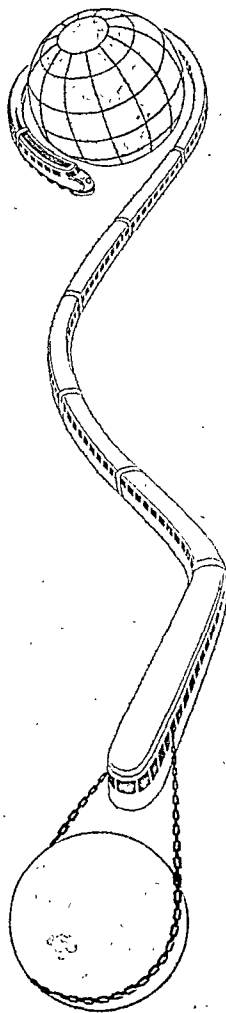
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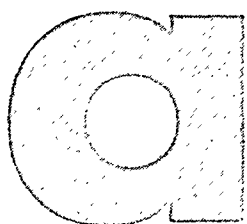
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# Diagnosis and Treatment of Trichinosis

SYLVESTER E. GOULD\*

WAYNE UNIVERSITY COLLEGE OF MEDICINE, DETROIT

## HISTORICAL

IN 1835, James Paget, then a 21-year-old first-year medical student at St. Bartholomew's Hospital in London, encountered, in the dissecting room, small whitish calcified specks in the skeletal muscles of a cadaver. He sought out someone who had a microscope, examined the specks and found them to be made up of cysts (Figure 1), each of which contained a worm. The worm was then named *Trichina spiralis* but is now known as *Trichinella spiralis*.

In 1846, a Philadelphia physician, Joseph Leidy, while eating a pork sandwich, noticed minute specks in the meat which struck him as being similar to those he had seen in the muscles of a human subject that he had dissected a few days previously. He examined the rest of the pork microscopically and found it to be full of trichinae (Figure 2). This discovery, for the first time, definitely associated the parasite with the pig.

It was not, however, until 1860 that the disease was known to produce fatal human infection. In that year, a German servant girl in Dresden, Germany, was brought into the hospital where she died thirty-three days after the onset of an illness which was diagnosed typhoid fever. Zenker, the pathologist, examined the skeletal muscles of this

patient at autopsy for evidence of degeneration characteristic of typhoid fever, but found instead dozens of living worms in every microscopic field (Figure 3). This startling picture led him to undertake a remarkable bit of detective work. He visited the home of this girl and found that a pig had been butchered just before Christmas-time, that every member of the household had eaten of various products made from this pig, and that all persons subsequently became ill with a disease variously diagnosed. He found the same living worms in the unused meat. With the aid of Virchow and other investigators, he then conducted experiments to work out the life cycle of the parasite (Figure 4).

When pork, containing living trichinae, is eaten by man, or when the scraps of pork (in garbage) are eaten by the pig, the muscle and the cyst walls are digested in the stomach of the host, liberating the larvae. These larvae, which are of male or female sex, mature in the small intestine of the host, and toward the end of the first week copulate. The adult male later dies but the adult female, burrowed in the mucosa of the small intestine, during the next eight weeks or so, liberates her living young worms into the mucosal lymphatic vessels from where they reach the heart, then the general blood stream, and finally are filtered out of the blood capillaries to settle and encyst in the skeletal muscles of the host (Figures 5-11).

Shortly after the discovery of this first fatal infection in 1860, several epidemics (Table I) occurred in Germany, the most notable of which

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Presented November 9, 1948, before the meeting of the Interstate Postgraduate Medical Association of North America, Cleveland, Ohio.



SYLVESTER E. GOULD

took place in 1865 in the town of Hederleben, having a population of 2,100. There 327 persons fell ill, and 101 died from this disease, a mortality of 30 per cent. This stirred the medical profession in Germany to urge the adoption of measures for control of the disease. The net result was that a system of microscopic inspection of all hogs slaughtered in Germany was instituted, for which Virchow, who was also a leader of the Reichstag, was primarily responsible.

AUTOPSY SURVEYS

Within recent years in the United States a number of surveys of the incidence of trichinosis in autopsies have been made, and these show an average of 16 per cent infection (Table 2). This means that at least 16 per cent of persons in the United States, at the time of death, have trichinosis. In our series of over 1,200 autopsies, we found a total incidence of trichinous infection of 22 per cent (Table 3). Notice in Table 3 that in succeeding decades the incidence became progressively greater, so that in the 50's we found an incidence of 33 per cent. It stands to reason that the older the person,

the more chances he has had of exposure to this infection.

At autopsy larvae may be sought by the usual microscopic method of sectioning, and by the compression (Figure 12) and digestion methods. In our series we found 2 per cent of infections when a single block of diaphragmatic muscle was sectioned. By compression of a 1.0 gm. portion of diaphragm we detected 11 per cent, but when 10 portions of 1.0 gm. each were examined we detected 29 per cent of infections. By the digestion method alone we found 16 per cent. When both methods were used we were able to recover trichinae from over 30 per cent of bodies examined. In large part, therefore, the incidence of infection as determined at autopsy will depend upon the methods used and the thoroughness with which these methods are applied.

The muscle taken from the patient or from the subject at autopsy may be examined under the microscope for presence of the organism. In the digestion method, artificial gastric juice (1 per cent pepsin and 1 per cent hydrochloric acid) is added to the ground muscle in a container. The mixture is stored in an incubator-room overnight to digest the muscle and the cyst walls. The larvae, however, resist digestion. When the mixture is then filtered, the organisms (Figures 13 and 14) are recovered (Table 4).

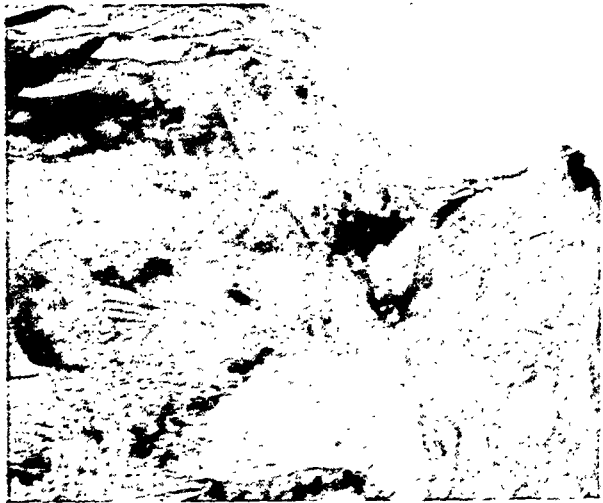


Figure 1. Portion of diaphragm, from a man of 59, showing calcified trichina cysts.



Figure 2. *Trichina* larvae in muscle, seven months after infection. X45. Unstained preparation mounted in glycerin.

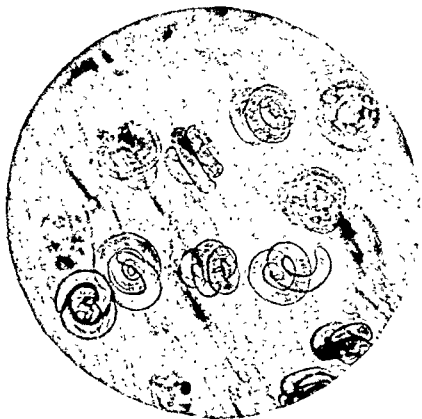


Figure 3. *Trichina* larvae in muscle, seven months after infection. X25. Unstained preparation mounted in glycerin.

#### DIAGNOSTIC METHODS

METHODS that may be used for diagnosis of the disease include examination of the blood for eosinophilia, immunologic tests (intradermal test, blood precipitin test, and complement-fixation test); demonstration of larvae in the host, in the blood, in the cerebrospinal fluid, in skeletal muscles, and demonstration of larvae in the suspected meat (Table 5).

The leukocyte count is generally increased in the disease, with eosinophilia as the most important single sign (Figure 15). Many times eosinophilia is present in persons who have eaten lightly infected meat, even though they develop no symptoms. This finding is encountered frequently in epidemics, in which the symptoms of various patients may be severe, moderate, mild, or absent.

The eosinophilia appears earliest at about the tenth day after eating the infected meat and increases to a peak in the third week. The severity of the disease is not paralleled by the severity of the eosinophilia. In other words, the degree of eosinophilia is not an index to the severity of the disease. In the presence of a complication the level of eosinophilia often falls; when the complication

disappears, the eosinophilia often returns. A sudden, rapid drop in number of eosinophils to one or zero is usually a grave prognostic sign, many times foreboding death of the patient a day or two later.

The duration of eosinophilia is usually several months. After six months, ordinarily, the eosinophilia has disappeared.

For the intradermal test, the material used is made from an extract of the ground larvae. The reaction first appears on the sixteenth day of infection (Figure 16). Blood precipitin and complement-fixation tests become positive on or after the thirtieth day.

#### SYMPTOMS

The incubation period of the disease varies from two to twenty-eight days, and averages ten days.

The stages of the disease are conveniently divided into the intestinal stage, the stage of muscular invasion, and the stage of convalescence.

The common symptoms of the disease are:

1. Intestinal: constipation or diarrhea, either of which may be severe and protracted.
2. Fever: important, for this is one of the few

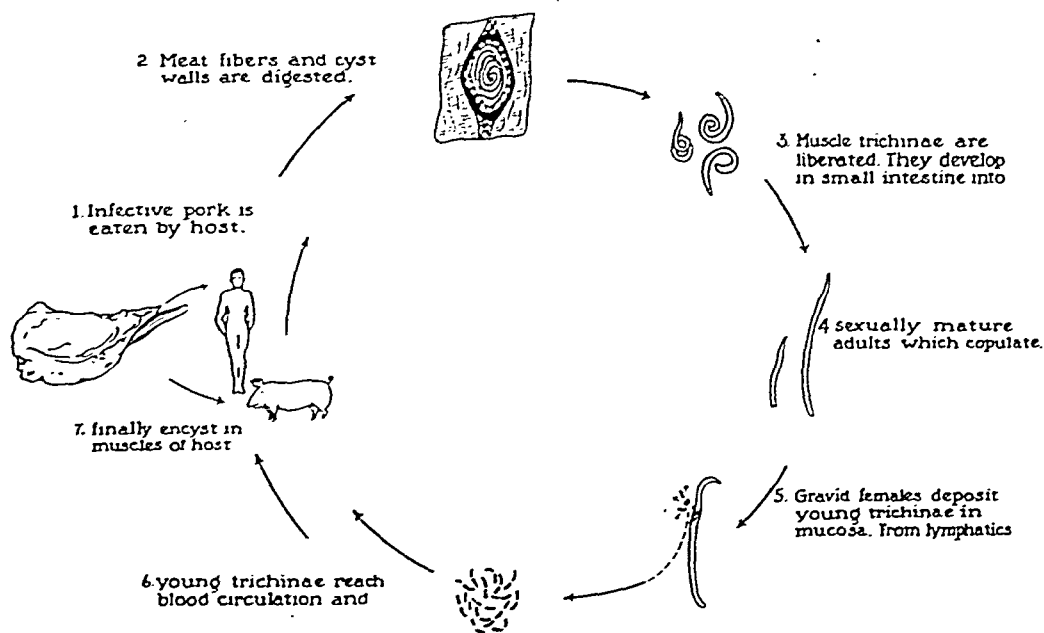


Figure 4. Life cycle of *Trichinella spiralis*.

parasitic diseases accompanied frequently by fever (Figure 17).

3. Ocular: early and important (Figures 18 and 19).

4. Muscular: giving rise to the most severe and distressing symptoms of the disease, pain. Of course, there is the positive biopsy; here the organism is seen to be encysted in the muscle, which is the seat of an intense inflammation (Figure 20).

5. Respiratory symptoms.

6. Neurologic symptoms; cutaneous symptoms.

There may be an encephalitis with associated petechial hemorrhages (Figure 21), and sometimes the patient complains of very severe headaches,

saying that the top of the head seems as if it were about to come off.

Splinter hemorrhages under the nails (Figure 22) are not infrequent. Hemorrhages may occur in any organ. I believe that small hemorrhages are usually produced by plugging of the capillaries.

7. The cardiovascular symptoms are perhaps the most important, in that most deaths are related to cardiovascular involvement.

Myocardial involvement is constant (Figure 23). The organisms invade the myocardium but, for some unknown reason the organisms are unable to encyst in the heart. However, they do set up a severe inflammation. Myocarditis is frequently the cause

Figure 5. Adult male trichinae (stage found in small intestinal tract of host early in infection). X 65.

Figure 6. Adult female trichina containing numerous larvae within its uterus. X 65.

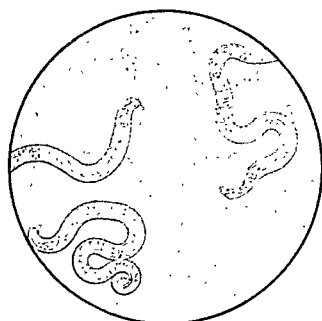
Figure 7. Portion of gravid adult female trichina imbedded in mucosa of duodenum of experimental white rat, six days after infection. X 55.

Figure 8. Portion of adult worm shown in Figure 7. X 250. Note larva present within vagina of mother worm, from which it will soon be extruded into tissues (intestinal mucosa) of host.

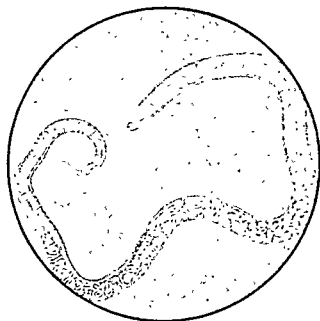
Figure 9. Muscle trichina. X 135. From white rat, six days after experimental infection.

Figure 10. Beginning coiling of trichina larvae in muscle of white rat, eighteen days after experimental infection. X 35.

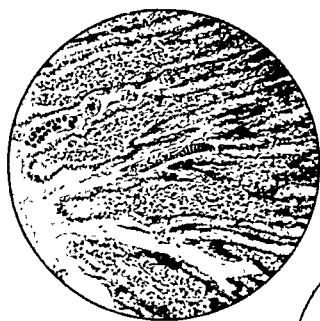
Figure 11. Myositis in human trichinosis four weeks after infection. Note degeneration of muscle, edema and inflammatory cell infiltration. X 70.



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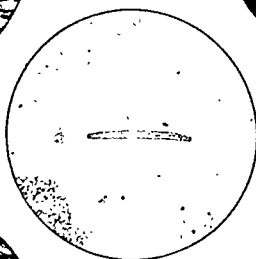
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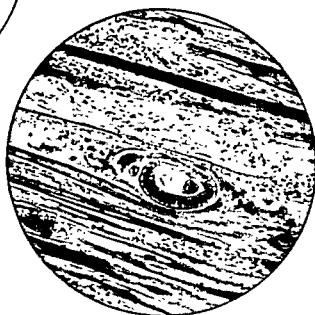
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11

TABLE 1  
EARLY EPIDEMICS OF TRICHINOSIS IN GERMANY

Year	Town	Persons Ill	Deaths	Mortality Rate, Per Cent
1849	Wegeleben.....	164	27	16.5
1863	Hettstädt, pop. 4,000.....	158	27	17.1
1865	Hedersleben, pop. 2,100.....	337	101	30.0
1883	Emersleben.....	403	66	16.4

TABLE 2  
INCIDENCE OF TRICHINOSIS IN THE UNITED STATES AT AUTOPSY

Year	Author	Locality	Method	Number of Examinations	Positive	
					Number	Per Cent
1931	Queen	Rochester, N. Y.	Digestion	344	59	17.1
		Boston, Mass.	Digestion	58	16	27.6
1934	Riley and Scheifley	Minneapolis, Minn.	Compression	117	20	17.1
1936	Hinman	New Orleans, La.	Digestion	200	7	3.5
1936	McNaught and Anderson	San Francisco, Calif.	Digestion	200	48	24.0
1937	Magath	Rochester, Minn.	Compression	220	17	7.7
1937	Pote	St. Louis, Mo.	Compression and microscopic section	1,060	163	15.4
1937	Queen (reported by Scheifley, 1938)	Denver, Colo.	Digestion	431	70	16.2
1938	Scheifley	Minneapolis and St. Paul, Minn.	Compression	118	15	12.7
1938	Evans	Cleveland, Ohio	Digestion and compression	100	36	36.0
1938	Walker and Breckenridge	Birmingham and Tuscaloosa, Ala.	Digestion and compression	100	33	33.0
1939	Butt and Lapeyre	Los Angeles, Calif.	Digestion	170	31	18.2
1939	Harrell and Johnston	Durham, N. C.	Digestion	44	0	0.0
			Compression	6	0	0.0
			Digestion and compression	55	3	5.4
1939	Hood and Olson	Chicago, Ill.	Digestion	208	12	5.8
			Digestion and compression	220	25	11.4
1939	Sawitz	New Orleans, La.	Digestion and compression	400	24	6.0
1940	Catron	Ann Arbor, Mich.	Digestion and 270 compression	300	44	14.7
1940	Oosting	Dayton, Ohio	Digestion and (1/3) compression	134	27	20.1
1941	Meleney	Nashville, Tenn.	Digestion and compression	209	21	10.0
1942	Wright	Various cities in 37 states	Digestion and compression	5,362	853	15.9
1942	Gould	Eloise, Mich.	Digestion	90	11	12.2
			Digestion and compression	1,141	266	23.3
Totals 1931 to 1942				11,287	1,801	16.0

of death. For that reason the patient in any moderately severe or severe infection should be put to bed to safeguard the heart until all danger of myocardial failure is past. This period should extend to two or three weeks after disappearance of general myositic pain.

The electrocardiograms in Figure 24 are from a supervising nurse who was at home quite ill with the disease for four weeks before she came to our attention. She insisted she was not sick enough to go to bed, but we put her to bed at once, despite her protest. We not only put her to bed but put her at absolute rest. At this time she had but few

mild residual muscular and cutaneous symptoms. Ten days after she was confined to bed she developed precordial distress with a smothering sensation and palpitation, and the electrocardiogram showed evidence of myocarditis. Ten days later these symptoms had disappeared, and two weeks thereafter she was permitted out of bed. She then made a rapid convalescence.

The literature contains many reports of patients with moderately severe infections who have left their bed after beginning of subsidence of the acute muscular symptoms only to develop fatal acute myocardial failure a week or two later.

TABLE 3

INCIDENCE OF TRICHINOSIS ACCORDING TO AGE AT AUTOPSY  
(1,231 autopsies)

Age (In Years)	Persons Examined	Persons With Trichinosis	Per Cent With Trichinosis
All ages	1,231	278	22.6
Under 10	2	0	0
10-19	6	0	0
20-29	28	1	3.6
30-39	84	10	11.9
40-49	188	32	17.0
50-59	293	72	24.6
60-69	335	78	23.3
70-79	219	61	27.9
80-89	70	23	32.9
90-99	4	1	25.0
Unknown	2	0	0

## TREATMENT

The only treatment is symptomatic with bed rest until the danger of heart failure or of complications has passed. There is no specific remedy for trichinosis. What then may we do to control this disease?

## EXTENT OF INFECTION IN U.S.

First, I should like to say another word about the extent of the infection in the population of the United States. In order to understand that, we must realize that the disease, transmitted to man from the hog, is quite prevalent among hogs in the United States.

The incidence in hogs depends upon the type of feeding given them. Among hogs that are fed slaughter-house offal, 15 per cent of animals will develop trichinosis. Among hogs fed uncooked garbage, 6 per cent will show this infection. But if hogs are fed grain or cooked garbage, less than 1 per cent will develop trichinosis. I believe that most of these infections are caused by occasional pork scraps that get into their food. I believe the factor of spread of the infection from rats to pigs is of little or no significance.

Compared to many other countries, we see that the incidence of trichinosis among hogs in the United States is remarkably high (Table 6). Approximately 1.5 per cent of 8,000,000 hogs examined in this country between 1898 and 1906 were found to have this disease. It is remarkable that in 1948, the average incidence of trichinosis among hogs in this country is still 1.5 per cent! Why? you may

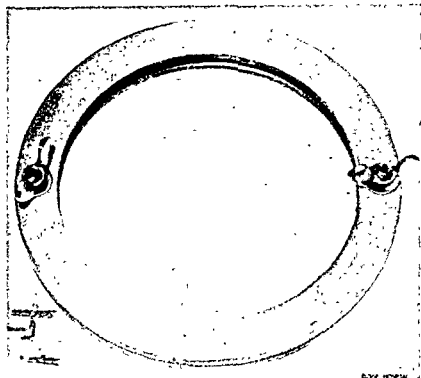


Figure 12. Compressor for microscopic examination of muscle. This consists of two pieces of plate glass which are held in a metal frame. The muscle is placed between the glass plates and compression is applied by means of thumb screws. X  $\frac{1}{2}$ .

ask. Because, during all these years, practically nothing has been done to control this disease.

THE following little problem in arithmetic indicates the possible danger from eating pork in the United States: In 1944, nearly 100,000,000 hogs were slaughtered. These animals produced nearly 13,000,000,000 pounds of pork, and it is estimated that this furnished approximately 30,000,000,000 servings of pork. For a population of 150,000,000 people this would mean approximately 200 servings per person per year. Since 1.5 per cent of all hogs in the United States are trichinosis, 1.5 per cent of 200 servings would mean three servings of trichinosis pork, on the average, per person per year. Since the average length of life in the United States is 66 years, 66 times 3 means that 200 servings of trichinosis pork will be offered, on the average, to each person in the United States during his lifetime. Fortunately, most of these servings will contain dead trichinae because the meat has been properly prepared. But remember this: *Only one meal with living trichinae is required to produce the infection, and one seldom knows which meal that may be.*

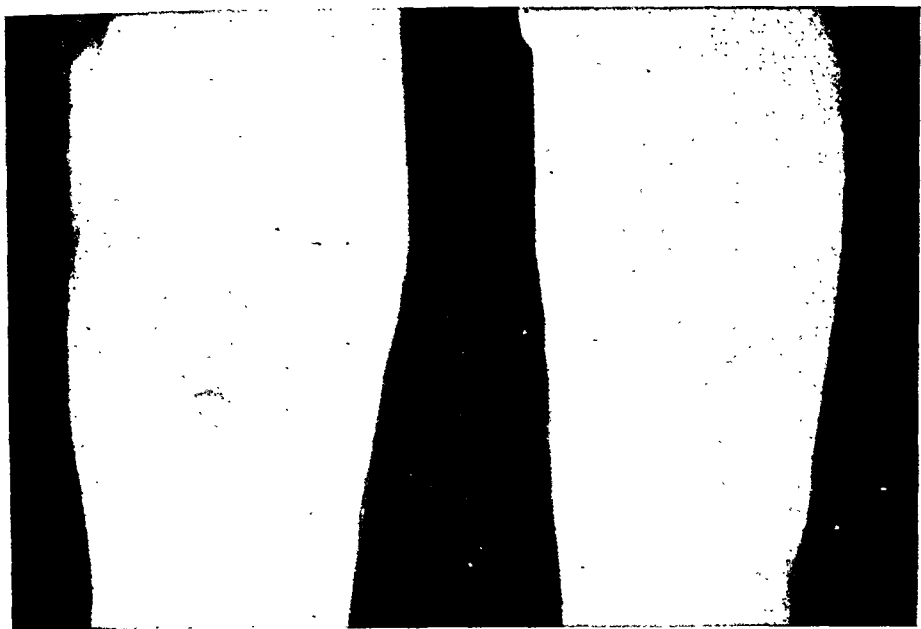


Figure 16. Immediate intradermal reaction (left), showing appearance of wheal within fifteen minutes after intradermal injection of 0.1 cc. of a 1:10,000 dilution of trichina antigen. Control test (negative) on right.

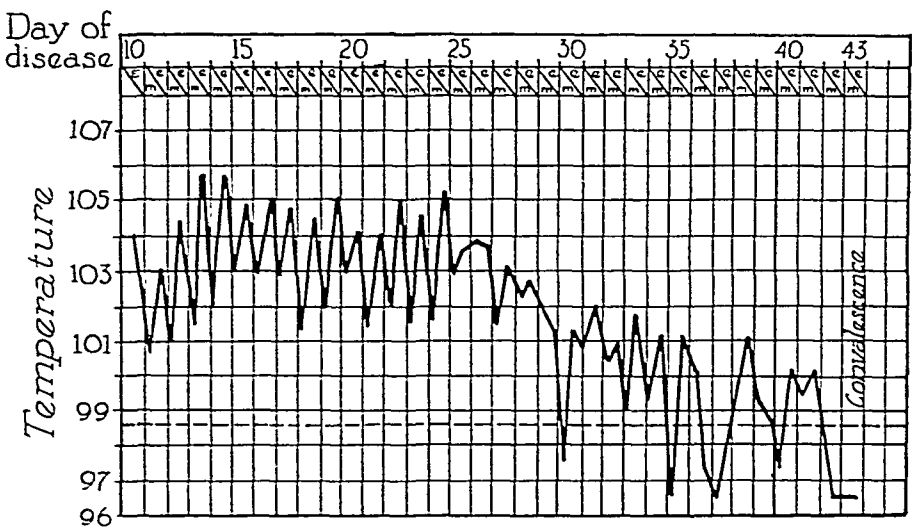


Figure 17. Fever chart in severe clinical trichinosis. (After Glazier.)

The minimum recommended temperature for killing trichinae is 137° F. This is the temperature which the Government requires in federally inspected plants for processing of pork products.

THE situation in the United States at the present time concerning treatment of pork for the con-

trol of trichinosis is very much like the status of pasteurization of milk thirty or forty years ago. We might ask now, "Shall milk be pasteurized?" Well, we take it for granted that we must have pasteurized milk in our cities. But we have no similar protection from the danger of trichinosis in the eating of pork.

We might similarly ask, "Shall pork be process-



Figure 18. Characteristic edema of upper eyelids and face in acute trichinosis. (Courtesy of Dr. J. B. McNaught.)

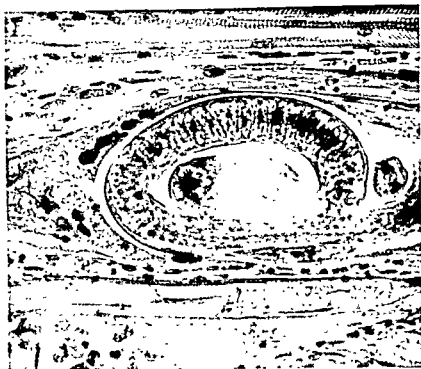


Figure 20. Encysting trichina larva in human skeletal muscle, four weeks after infection. X 300.

ed?" Of course it should be processed. But virtually nothing is being done about processing pork at the present time. Pork should carry a label indicating it is free from the danger of trichinosis in the same way that pasteurized milk carries a label, in order that the consumer may know that it is a safe food.

#### RECOMMENDED REGULATIONS

It is recommended that the Government (or state or local authority) require that all pork intended for sale shall be so processed as to render it free from viable trichinae. It is recommended that all pork products shall then bear the label, "This product conforms to United States (or state or local) regulations for pork."

It must be obvious that this disease, being so widespread, constitutes a major health problem in the United States and that, except for those instances in which pork products are produced under federal inspection, nothing is now being done about it. Even though the consumer is aware of the danger of trichinosis, often he cannot tell if the pork or pork product which he eats has been properly prepared. Is it not shocking then to realize that the American consumer usually has no guarantee that the pork that he eats does not con-

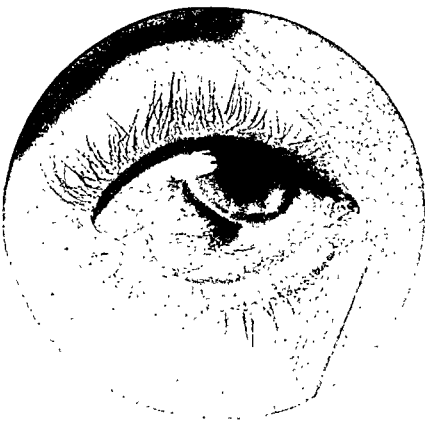


Figure 19. Conjunctival hemorrhage in acute trichinosis.

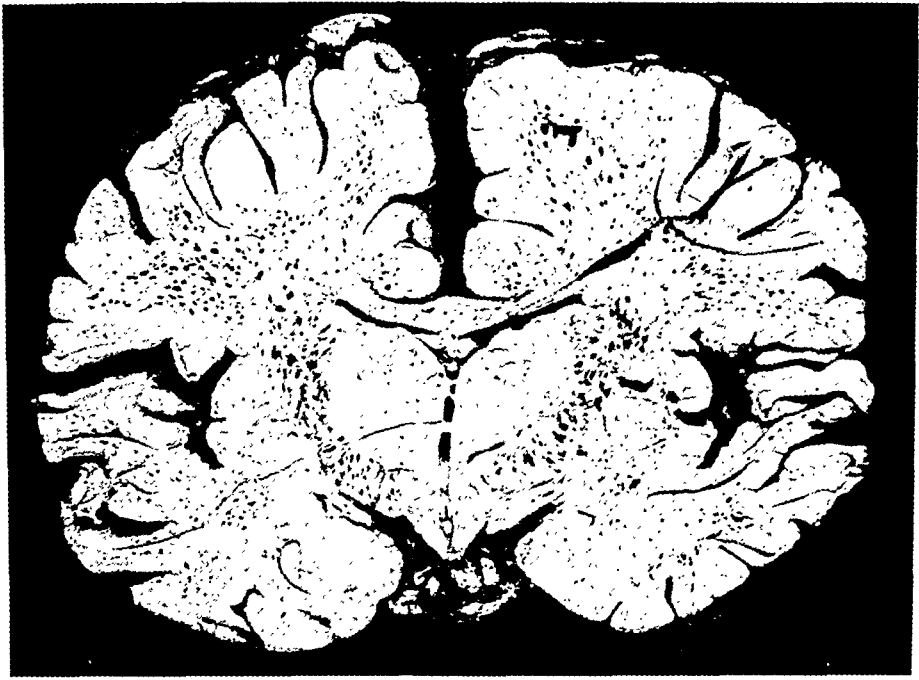


Figure 21. Trichinous encephalitis. Death seventeen days after onset of symptoms. (Courtesy of Dr. K. L. Scharenberg.)

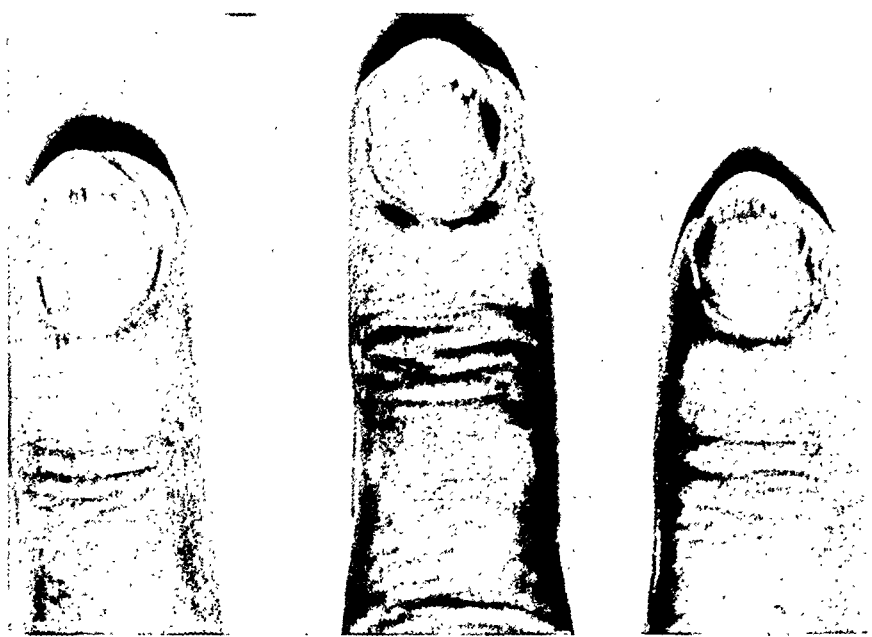


Figure 22. "Splinter" hemorrhages beneath nails of patient with trichinosis. (Courtesy of Dr. J. B. McNaught.)

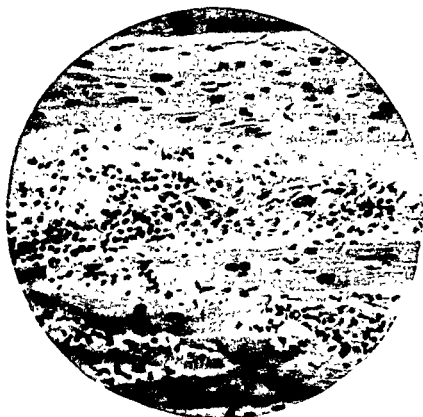


Figure 23. Trichinous myocarditis from human infection. X 185.

*Acknowledgment.* Figures 1, 3, 4, 7, 8, 10, 11, 13, 17, 18, and 21-24 are reproduced from S. E. Gould's "Trichinosis." Courtesy of Charles C Thomas, publisher, Springfield, Ill.

tain living trichinae? Is it not shocking that the average American, in eating pork, often unknowingly does so at the risk of becoming seriously ill or of dying from trichinosis? And is it not high time that something *was* being done about it?

I believe that all pork, unless otherwise proc-

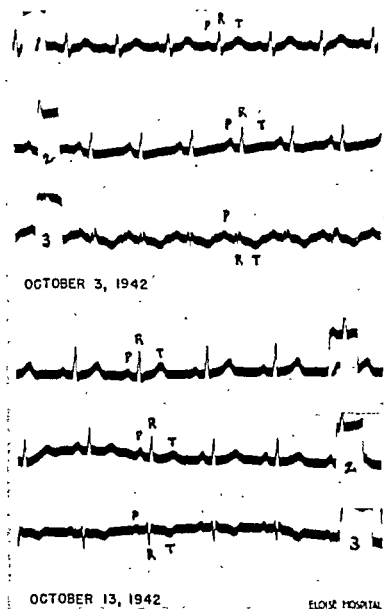


Figure 24. Upper electrocardiogram taken twenty-six days after infection showing flat T waves in lead II. Lower tracing taken ten days later, shows return of these T waves to upright position.

TABLE 6  
TRICHINOSIS AMONG HOGS

Place	Year	Hogs Examined	Percentage of Hogs Trichinosis	Number of Trichinosis Hogs Per Million
New Zealand	1937	20,000	0	0
Copenhagen	1910-1935	6,000,000	0.00075	7
Prussia	1932	14,000,000	0.001	9
Prussia	1933	14,000,000	0.0008	8
Heidelberg	1934-1939	100,000	0.001	10
Poland	1935	3,600,000	0.05	500
Canada	1940	2,995	0.57	5,700
United States	1898-1906	8,000,000	1.41	14,100

essed, should be subjected to low temperature treatment as a practical means of rendering all trichinae that may be present within it nonviable. In this way, pork may be made a food that *is* fit for

human consumption.

#### REFERENCE

- GOULD, S. E.: Trichinosis. Springfield, Ill., Charles C Thomas, 1945; 356 pp.



Figure 21. Trichinous encephalitis. Death seventeen days after onset of symptoms. (Courtesy of Dr. K. L. Scharenberg.)

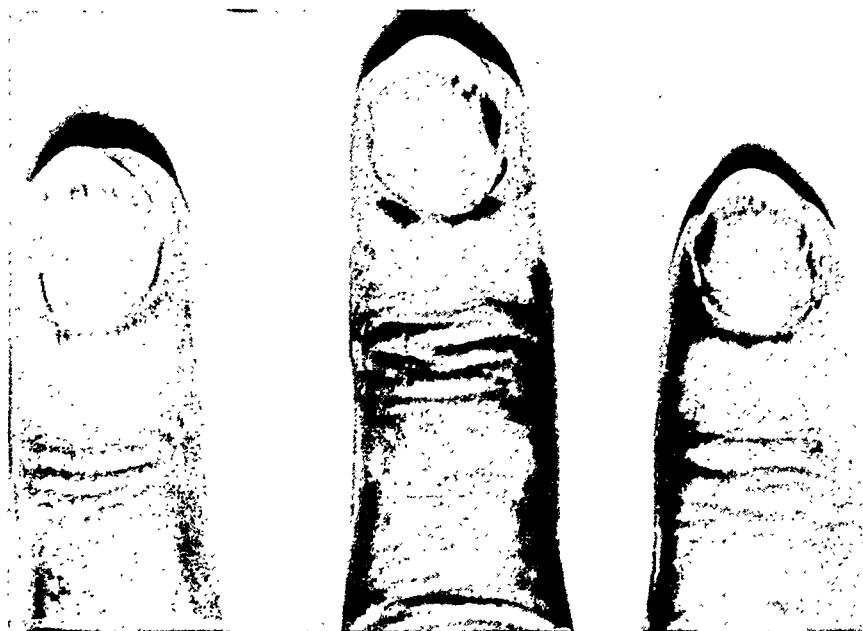


Figure 22. "Splinter" hemorrhages beneath nails of patient with trichinosis. (Courtesy of Dr. J. B. McNaught.)

When the hearing for airborne sound in an otosclerotic ear has audiometrically receded to the 40 decibel level or lower in the 512-1024 and 2048 pure tone frequencies, which frequencies are the most important for the intelligibility of the spoken voice, air conduction hearing ceases to be useful for social and economic contacts. Under such circumstances the performance of the fenestra nov-ovalis operation may be considered.

However, the conclusion that the performance of the fenestra nov-ovalis operation can result in the restoration of practical serviceable and unaided hearing in an ear deafened as a result of otosclerosis may be reached only in the presence of obtainable evidence suggesting that there still exists in that ear a sufficient amount of cochlear nerve function not being utilized by the functionally impeded air conduction mechanism, which can permit such an improvement in hearing for airborne sound following creation of a new oval window.

The cochlear nerve function reservoir in an ear deafened as a result of stapedial ankylosis due to otosclerosis may be considered adequate enough for the restoration of practical serviceable and unaided hearing with the fenestration operation when (1) the preoperative bone conduction hearing for the 512-1024 and 2048 pure tone frequencies, when tested audiometrically with care and understanding, is found to be not lower than the 30 decibel level, and the decibel level of the bone conduction hearing is at least 25 to 30 decibels higher than the decibel level of the air conduction hearing; and (2) the intelligibility for the normally spoken voice and whisper is improved to the practical level with the aid of either the old-fashioned speaking tube or the ear trumpet.

THE correct determination preoperatively of the cochlear nerve function reservoir remaining untapped by the functionally impaired air conduction mechanism is not difficult if the otologist possesses a good old-fashioned clinical sense plus an appreciation of the psychology of the deafened. By supplementing the audiometric testing with intelligent use of the old-fashioned 512-1024 and 2048 frequency steel tuning forks for testing bone conduction hearing for pure tones, plus the use of the outmoded speaking tube for testing the intelligibility for the spoken voice, the otologist can obtain much more valuable information as to the possibility of restoring practical hearing with the



JULIUS LEMPERT

fenestration operation in a given ear than by accepting the reports of conclusions reached by physicists and acoustic engineers with the use of extremely complicated apparatus in their psycho-acoustic laboratories.

No otologist should perform a fenestration operation without first personally testing the patient to determine his chances for the restoration of practical hearing. He must never operate solely on the findings of another otologist.

Unless the otologist is conscious of the existing burning desire within a deafened person to have his hearing function restored and the psychology behind his readiness to submit to any form of treatment, no matter how great the risk or remote the prospect of relief may be as a result of such treatment, he can readily be misled to diagnose a non-suitable case as a suitable one for the fenestration operation. The fenestration operation is as a rule the patients' last hope of regaining their hearing, since they always try everything less radical first.

Many such patients come ready to induce the otologist to operate. They know that good bone conduction hearing is a prerequisite to such surgery. They often come psychologically prepared to

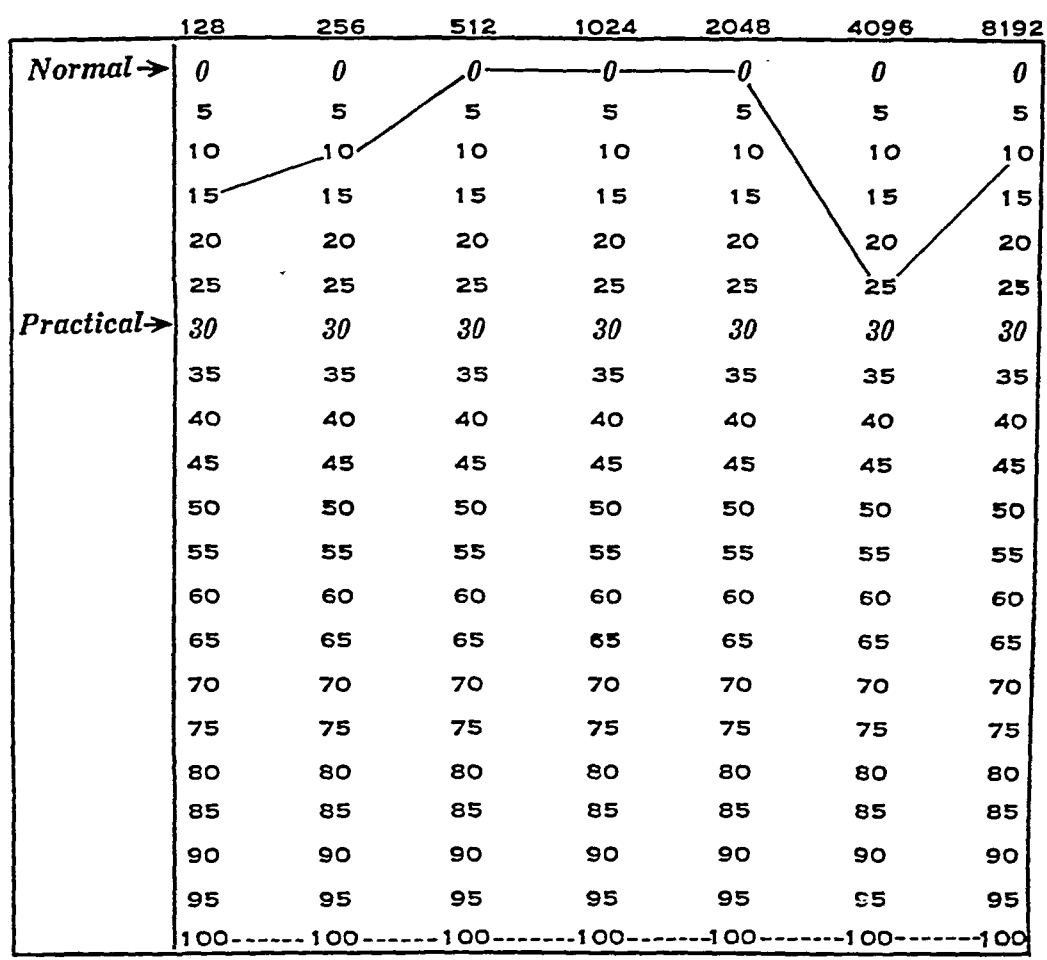


Figure 1a. Despite a preoperative total loss of air-conduction hearing, the presence of an unusually adequate cochlear nerve function reservoir permitted the restoration of hearing with the Lempert fenestra nov-ovalis operation to the audiometric level of normalcy. The hearing has been continuously maintained at this high level for the past six years.

convince the surgeon, who is testing their hearing with the old reliable steel tuning forks, that their bone conduction hearing is much better than their hearing for air conduction. Unless the otologist is on the alert and understands this psychology and tries to compare their voluntary with their involuntary response to sound, he will often be misled to operate with no chance of improving the hearing since the cochlear nerve function reservoir was erroneously estimated as being adequate enough to permit the restoration of hearing.

Experience has shown that an improvement in hearing for air-conducted sound following fenestration must reach at least the 30 decibel level in the 512-1024 and 2048 frequencies to be considered as

serviceable enough for social and economic purposes and obviating the necessity of wearing a hearing aid.

Hearing can be restored to the practical level or higher, even as high as the normal level by the fenestration operation, providing the reservoir of unused cochlear nerve function still present at the time of operation is sufficient to permit such restoration of hearing. In the presence of an adequate cochlear nerve function reservoir the degree of the preoperative hearing loss for airborne sound, no matter how great, will nevertheless not interfere with restoration of practical hearing. (Figure 1a.)

Having correctly diagnosed the possibility of obtaining practical hearing and having obtained it

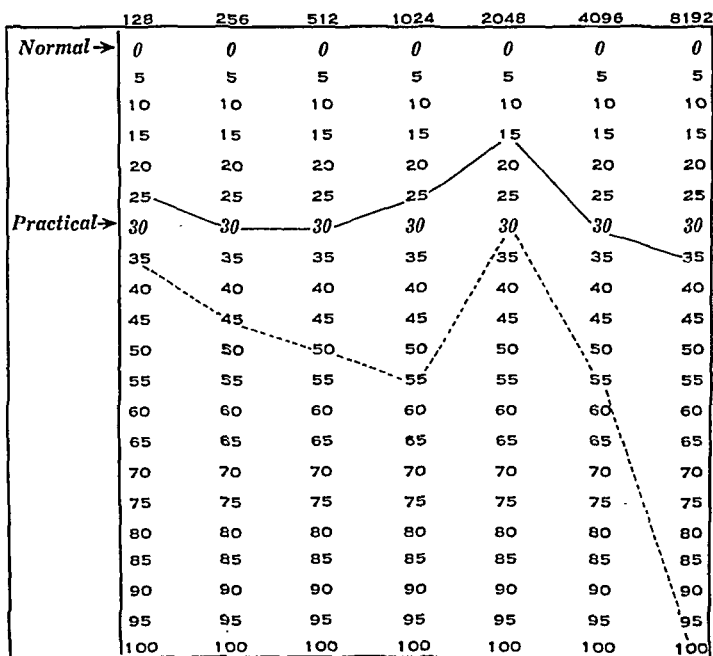


Figure 1b. Practical hearing restored and continuously maintained since the performance of the Lempert fenestration operation eleven years ago.

following the fenestration operation, the permanent maintenance of such a result has been found to depend mainly upon our ability to prevent closure of the newly created fenestra by osteogenesis. (Figure 1b.)

Postoperative clinical observation of 4,000 fenestration operations which I have performed and the careful study of the newly created fenestra region in 450 revisions, plus the histologic observations made in the experimentally controlled post-fenestrated Rhesus monkeys, have shown that when osteogenesis takes place following fenestration it does so either in the region of the fenestra rim or in the perilymph space and also in both the fenestra rim and the perilymph space. Further investigation of this problem has revealed that osteogenic closure of the new fenestra is influenced

mainly by (1) the site chosen for the creation of the fenestra; (2) the inherent natural tendency for osteogenic repair of the freshly injured histologic bony layers of the fenestra rim; and (3) bone dust and bone slivers left behind in the region of the fenestra gap and within the perilymphatic space.

#### SITE FOR CREATION OF THE FENESTRA

In 1938 I described the first practical one-stage technique for fenestrating the labyrinth in clinical otosclerosis and fenestrated in accordance with tradition the external semicircular canal posterior to its ampullated end. Osteogenic closure of the newly created fenestra made in this region ultimately resulted in about 60 per cent of the successfully operated upon cases (*Arch. Otolaryng.* 28:42-97 [July] 1938). (Figure 2a.)

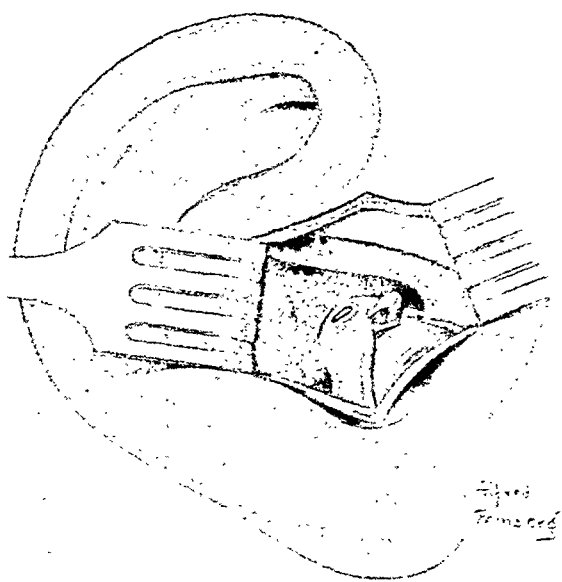


Figure 2a. (Left) Lempert fenestration (1938). Fenestra was made in the external semicircular canal posterior to its amputated end.

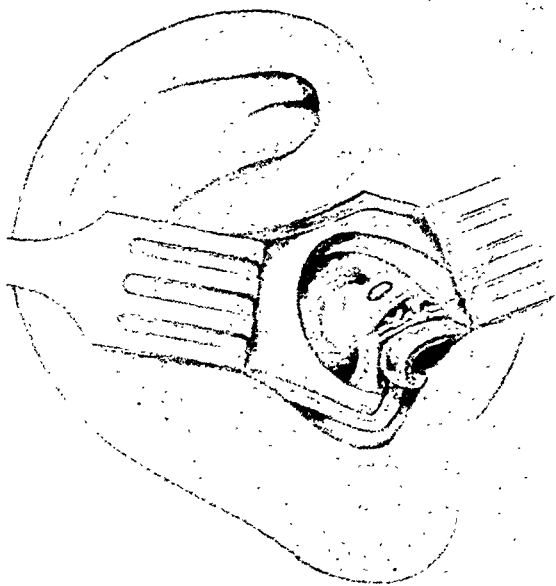


Figure 2b. (Right) Lempert fenestra nov-ovalis (1941). Fenestra is made over the surgical dome of the vestibule.

During revisions of these postoperatively closed fenestras I repeatedly observed that the tendency for osteogenic closure was lowest near the amputated end of the external semicircular canal. Based upon this observation and the reasoning to which it led I decided to move the fenestra site forward. I developed and described the fenestra nov-ovalis technic, whereby the fenestra is created within the surgical dome of the vestibule (*Arch. Otolaryn.* 34:880-912 [Nov.] 1941). This technic has since been universally adopted by otologists interested in fenestration surgery.

The fenestra nov-ovalis technic reduced the number of osteogenic closures of the fenestra in the successfully operated upon cases to 25 per cent. (See Figure 2b.)

#### OSTEOGENETIC REPAIR OF FRESHLY INJURED HISTOLOGIC BONY LAYERS OF FENESTRA RIM

Controlled animal experimentation has shown that burnishing the freshly cut histologic layers of the bony rim of the newly created fenestra with

smooth metal burnishing burs delays osteogenic closure of the fenestra, but does not prevent it (*Arch. Otolaryn.* 36:473-490 [Oct.] 1942).

Further investigation of the effect of burnishing the fenestra rim with various metals in the experimentally controlled Rhesus monkey has revealed that burnishing with pure lead prevents osteogenic closure of the fenestra (*Arch. Otolaryn.* 46:512-527 [Oct.] 1947). (Figures 3 and 4.)

Though animal experimentation and application in the human have shown that physical impedance through the use of inert metal obturators and cartilage stopples can prevent osteogenic closure of the fenestra, lead burnishing of the fenestra rim has been found to be the simplest and most applicable means of accomplishing it.

The lead burnished fenestra nov-ovalis technic has been exclusively employed in the human during the last twenty-two months. Only 5 per cent of the successfully operated upon cases which are now more than one and one-half years postoperative have shown signs and symptoms suggestive of osteogenic closure of the fenestra.



Figure 3a. Ex. 2. Monkey No. 31. Right experimental ear. Fenestra burnished with pure lead. No bone regeneration seven months postoperatively.



Figure 3b. Ex. 2. Monkey No. 31. Left control ear. Fenestra not burnished with lead. Bone regeneration is complete seven months postoperatively.

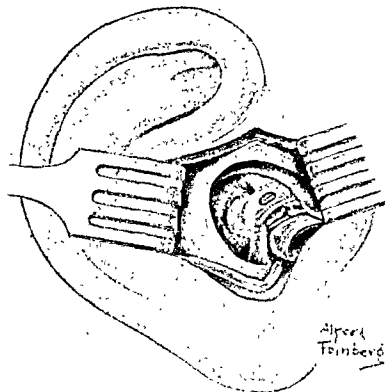


Figure 4a. (Left) Lempert fenestra nov-ovalis (1941). Fenestra rim was burnished with 22-carat gold burr, which delayed bone regeneration.

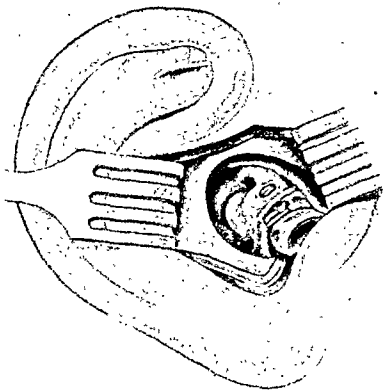


Figure 4b. (Right) Lead-burnished Lempert fenestra nov-ovalis (1947). Fenestra rim is burnished with pure lead which prevents bone regeneration.



Figure 5. Ex. 3. Monkey No. 42. Left. (Six months and one week postoperative.) Perilymphatic endosteal osteogenesis initiated by bone particles unavoidably lost during the process of fenestration within the perilymphatic space. The fenestra proper remained patent.

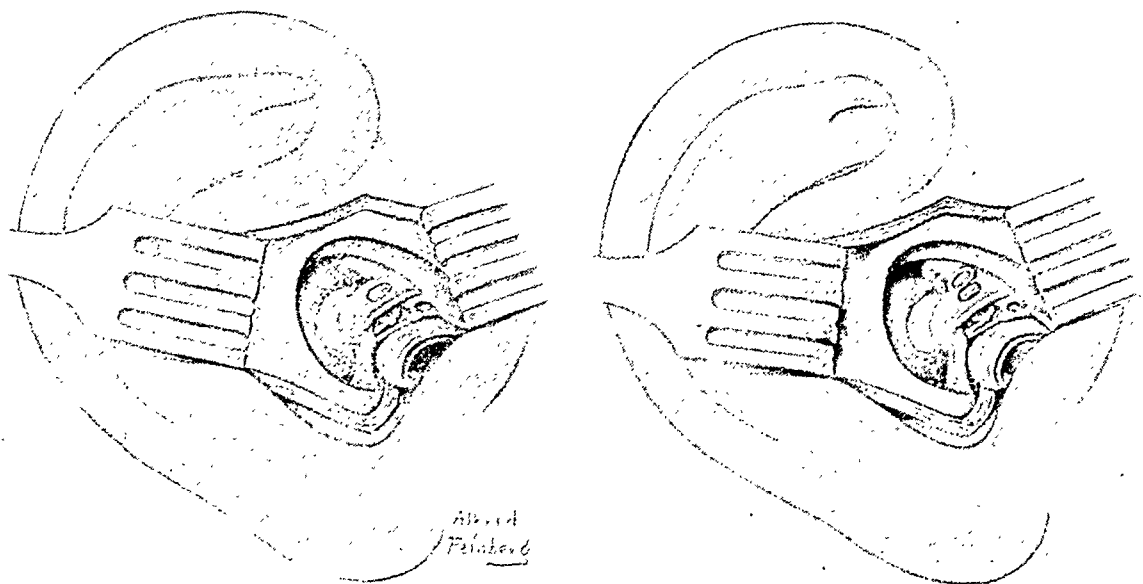


Figure 6a. (Left) Lempert fenestra nov-ovalis (1941). Fenestra was made by fracturing and pulverizing the final endosteal bony layer of the surgical dome of the vestibule. Bone dust and bone chips were by-products of this technic.

Figure 6b. (Right) Bone-dust-free Lempert fenestra nov-ovalis (1948). Fenestra is created without fracturing or pulverizing the endosteal bony layer. Instead an endosteal bone cupola is created, its base is incised and the cupola is lifted and removed intact.

BONE DUST AND BONE SLIVERS LEFT BEHIND  
IN FENESTRA REGION

**I**N the surgical treatment for clinical otosclerosis, bone sand and bone splinters have always been by-products of fenestrating the bony labyrinthine capsule with the electrically driven burr. When the final endosteal bony layer is fractured inward and pulverized, bone dust and bone splinters are pushed in the direction of the perilymph space with most of them coming to rest upon the shredded endosteal membrane and the endolymphatic labyrinth. It has been a well recognized fact that when these bone particles are not meticulously removed from the fenestra region they may stimulate and enhance the naturally existing tendency for osteogenesis in the freshly cut bony walls of the fenestra rim.

It is for this reason that various means of meticulously removing the fractured and pulverized endosteal layer of the bony capsule, which is seen resting upon the shredded endosteal membrane and the endolymphatic labyrinth, are being practiced by otologists doing fenestration surgery.

However, every careful otologist practicing fenestration surgery could not help but observe that in fracturing and pulverizing the endosteal bony layer of the fenestra region, bone dust and bone splinters unavoidably fall into the perilymph space and frequently disappear beyond visualization and retrieval.

Lindsay, after having made similar observations following experimental fenestration surgery in the Rhesus monkey, stated as follows: (*Arch. Otolaryn.* [Nov.] 1947.)

The histologic examination has demonstrated that although at operation the technic appeared to be carried out faultlessly the complete removal of bone dust and fragments was rarely accomplished.

Observations in the human during revisions and histologic studies of the postfenestrated Rhesus monkey have shown that bone particles, which unavoidably enter the perilymph space during labyrinthine fenestration, when not removed will stimulate perilymphatic endosteal osteogenesis. (See Figure 5.)

Based upon the above observations I developed the bone-dust-free fenestra nov-ovalis technic, which permits the creation of the fenestra without the formation of bone dust or bone chips. The heretofore existing problem of how to best accomplish the removal of bone dust has thus been disposed. (*Arch. Otolaryn.* 47:280-288 [March] 1948). (Figure 6.)

It is logical to assume that the bone-dust-free atraumatic creation of the fenestra will prove to be another great advance towards the final successful solution of the surgical treatment of clinical otosclerosis by still further reducing the percentage of failures.

## ALUDRINE IN RELIEF OF ASTHMA

**I**NHALING a mist of aludrine, a synthetic drug modified from adrenalin, relieves both mild and severe asthma, Dr. Leslie N. Gay and Dr. James W. Long of Johns Hopkins University School of Medicine report, following treatment of 48 patients with the solution. Hand atomizers were used. Patients were instructed to administer five inhalations at the onset of wheezing and to repeat in five minutes if necessary. Patients were able to determine for themselves the number of inhalations needed.

Every patient with mild asthma obtained complete relief after one course of three to six inhalations. Among 19 patients having a moderate degree of asthma, 16 gained moderate to marked relief after two to three courses of four to six inhalations. Of the 21 who had severe attacks, 16 received moderate to marked relief from one to three courses of six to eight inhalations. Most of these were cases heretofore requiring emergency treatment in an outpatient department. Only two extreme cases failed to get some benefit. Five patients who no longer responded to adrenalin responded quickly to aludrine mist.

## 1948 DEATH RATE OF INSURED SETS LOW RECORD

**T**HE death rate among American life insurance policyholders for 1948 will probably set an all-time low record, the Institute of Life Insurance reports. The exact gain will not be known until all data is computed, but preliminary estimates show many thousands fewer policyholder deaths last year than would have occurred on the basis of death rates five years ago. Leading cause of death in the policyholder group, one-third of the total or approximately a half million, was cardiovascular and renal diseases. Nearly 1,350,000 policies are expected to become death claims for the year, a new record high total because of the increase in policies at risk.

# Dynamic Therapeutics in Chronic Disease

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ON one floor of a better-than-average apartment building in New York's upper West Side, live four families whose incomes are typical for that section of the city. One, a young married couple with a small child, has no particular medical problems; but in each of the other three, at least one member of the family suffers from chronic disease.

In one family, it is a 13-year-old child with rheumatic heart disease. In another, the 48-year-old mother suffers from diabetes. In the third, the grandfather is hospitalized with paralysis, the result of a stroke of apoplexy. An unusual group? No, just an average cross-section, for there are some 23,000,000 persons in this country who have been disabled by accidents or are suffering from disease, and a minimum of several million who are so disabled they can be considered chronic invalids.

Today, as medical science moves forward in the prevention and cure of infectious disease, chronic illness has become the nation's primary medical problem. In 1900, seven chronic diseases (cancer, diabetes, intracranial lesions of vascular origin, diseases of the heart, diseases of the arteries, cirrhosis of the liver, and acute and chronic nephritis) were responsible for 25.7 per cent of all deaths in New York State. Between 1900 and 1940, a period in which the population of New York State increased by 85 per cent and the total number of deaths increased by only 13 per cent, the number of deaths from this group of chronic diseases increased by 200 per cent, and now includes over two-thirds of all deaths in the state.

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Presented November 9, 1948, before the meeting of the Interstate Postgraduate Medical Association of North America, Cleveland, Ohio.

One of the principal causes of the increasing prevalence of chronic disease has been the great advances in medical and surgical care which have prevented death and produced an aging population. Two thousand years ago, the average length of life was 25 years; at the turn of the century, it was 49; today, it is 66. In 1900, one person in twenty-five was 65 years of age or older; it is estimated that in 1980, the ratio will be one in ten. The chances are now two out of three that a young man now starting his working life at the age of 18 will live to his retirement age of 65. A 45-year-old man today has seventy in one hundred chances of reaching the age of 65, and the chances for a 55-year-old man are seventy-eight in one hundred. White men now at the age of 65 can expect to live an additional twelve and one-half years on the average, and white women an average of fourteen and one-quarter years.

As people become older, their medical needs change, and they demand more medical service. In 1940, the 26.5 per cent of the nation's population over 45 required over half the nation's medical services. By 1980, it is expected that the number of persons over 45 will constitute nearly half of the population.

The incidence of chronic disease is definitely related to economic status. It develops most frequently among families of low income, and when it strikes, results in further reduced income and depletion of financial reserves. In the National Health Survey of 1936, chronic illness was found to exist nearly twice as much among persons on relief as those earning \$3,000 a year and over. A more recent study in Illinois showed that 23 per cent of all public assistance recipients were chronic invalids. In Connecticut, the percentage was 20, and in New Jersey, 38 per cent of those receiving old age assistance are chronically ill.

Although chronic disease is more prevalent in older persons, authorities state that 16 per cent of all persons with known chronic disease are under 25 years of age. A study at Yale found the percentage to be 33.

As Dr. Ernest P. Boas, an authority on chronic disease, pointed out in the New York Academy of Medicine's report on "Medicine and the Changing Order," there are but two chronic diseases, pulmonary tuberculosis and mental illness, in which their medical care has become an accepted community responsibility. For other chronic invalids there is no well-planned and integrated service. They find refuge in general hospitals, convalescent homes, homes for the aged, and the back bedrooms of relatives.

Much of the acute financial plight of both municipal and voluntary hospitals is caused by the increasing numbers of the chronically ill who enter the hospitals and stay for long periods. Dr. Edward M. Bernecker, Commissioner of Hospitals in New York City, has reported that 22.5 per cent of the general care beds in municipal hospitals in New York City are occupied by patients with long-term illnesses. The percentage in voluntary hospitals is said to be around 20. In a recent survey in Syracuse, New York, it was found that 84 per cent of 902 successive patients in medical wards were chronically ill.

It is agreed that a great many of the chronically ill must have general hospital care initially. Many, however, remain in the hospital purely because of the lack of any place to which they can go if they are discharged. Convalescent or nursing homes are totally inadequate to meet the need, and patients discharged to their homes, where there are no facilities for their care, frequently must be readmitted to the hospital.

ONE of the great needs is provision for total treatment of the chronically ill patient in terms of his whole problem. Many such patients cannot be rehabilitated to the extent of employability, but a great percentage can be rehabilitated to the point of sufficient self-care so that they are able to live at home, requiring a minimum of aid from other members of the family.

Both the Veterans Administration and some civilian hospital rehabilitation programs have demonstrated that rehabilitation to the point of self-care, and even to full or limited employment, is



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sis, paralysis, and Buerger's, Parkinson's, and heart diseases have been discharged from the hospital and are now at home taking care of themselves. All but 13 of the original 126 patients have recovered all or part of their ability for self-care. At the beginning of this program, 83 of these veterans were "completely hopeless," but 49 of that group have been rehabilitated to the point of complete independence, and the remainder are capable of self-care. However, in most of our civilian hospitals, the patient receives no such services. Hospitals complain that the chronically ill are responsible for their crowding, but they do little to provide many with the training services that will permit them to leave the hospital.

That many general hospitals recognize their limitations is shown by a study made in New York State last year on the medical, social, and institutional aspects of chronic illness. Although almost 70 per cent of the 139 hospitals surveyed accepted chronic patients, relatively few had specialized departments for their care. The great majority frankly admitted trying to avoid their admission.

The problem of providing an integrated service for the chronically ill is a complex one. It affects tremendous numbers of persons, numerous diseases, and types of disabilities, varying types of medical and semi-medical institutions, and, particularly, all community service agencies. There is one facet of the problem that stands out glaringly at the present time. That is the need in our general hospitals for dynamic training programs to enable many of the so-called chronic invalids to live independently within their own homes.

### THIRD PHASE OF MEDICINE

The modern concept of the third phase of medicine had its origin in World War II. The military services, during the war, found that through progressive rehabilitation starting at the bedside at the earliest possible moment, hospitalization time could be shortened and readmissions reduced. Among the most significant in a number of clinical studies of this program was that of Van Ravenswaay and his co-workers who studied 645 cases of virus pneumonia treated in the same acute wards and then transferred to alternate convalescent wards. In Ward I, "Nature took its course," and men sat around until they and the medical officer felt they were ready for duty.

In Ward II, the patients were kept in bed until

their sedimentation rate reached 10 mm. in one-half hour, and then they were put into a reconditioning program beginning with exercise for one-half hour the first day and increasing progressively until the twelfth day, when the patients were participating in a full five-hour day of physical training, mass games, competitive sports, and active recreation culminating in a ten-mile hike.

Group I averaged forty-five days hospitalization, with a 30 per cent recurrence rate; Group II averaged only thirty-one days hospitalization, with but a 3 per cent recurrence rate.

The modern concept of this third phase of medicine, which takes the patient from the bed to the job, springs both directly and indirectly from the war. The rehabilitation programs of the military services and the Veterans Administration demonstrated that planned, integrated programs of convalescent care stressing activity as an adjunct to definitive treatment could reduce the period of hospitalization, offset the deconditioning phenomena of bed rest, and prevent the harmful psychological sequelae which often result from extended hospitalization. The technics of physical rehabilitation and retraining for the severely handicapped developed by the military services, also have profound implications for the even larger number of our civilian population who are disabled.

### EMPLOYMENT OF HANDICAPPED PERSONS

INDIRECTLY, the war also created interest in the third phase of medical care, for because of war-time manpower shortage, many disabled civilians for the first time had an opportunity to take their place on production lines and demonstrate that, with proper selective placement, they were efficient, reliable, safe employees. Prior to the war, many employers refused to hire handicapped workers on the grounds that they were more accident prone than the able-bodied. The industrial accident rate of 87 of the great industrial plants in America, each having from 50 to 12,000 handicapped employees, has proved that concept fallacious. Studies of their experience show that 56 per cent found the accident rate of the handicapped lower than that of the able-bodied; 42 per cent found the rate the same as for the able-bodied; and only 2 per cent found it to be higher.

The Bureau of Labor Statistics of the Department of Labor has recently completed an exhaustive study of the work performance of 11,000 im-

paired and 18,000 matched unimpaired workers subjected to the same job incentives and exposed to the same job hazards. The data taken from industry's own records shows conclusively that the physically impaired person is not necessarily a handicapped worker if given reasonable job placement consideration. The two groups had identical frequency rates of non-disabling injuries, and the average rates of absenteeism showed no significant difference. The impaired workers, however, produced at a slightly better rate, and had relatively fewer disabling work injuries than did unimpaired workers on the same jobs. No matter how different these physically impaired workers may have been in other respects, on the job they were just another group of workers able to meet their unimpaired fellow workers on an equal competitive footing.

It is well recognized that the compensatory laws of nature make adjustments in the abilities of the handicapped worker. We know that the loss of one sense leads to the sharpening of the other senses; that men with no legs develop more capable hands; that men without vision develop their sense of touch to the highest degree. Such compensatory abilities are not automatic; they come only through experience and training. To be of maximum vocational value, their development must be under skilled guidance.

#### REHABILITATION RESEARCH

Although the underlying philosophy of the third phase of medical care is based on logic and common-sense, basic and clinical research in medical rehabilitation has been minimal until the past few years. Studies done in the military services, the inquiries of Keys, Barr, and others into the deconditioning phenomena of bed rest, the numerous reports of Powers, Whipple, Dock, Menninger, Ghormley, and others on bed rest as it affects their particular specialties are indicative of an increasing mass of scientific data on which such concepts are based. This evidence has been reinforced by the studies of successful experience with the impaired worker in industry, the economic values of rehabilitation, as shown by the Office of Vocational Rehabilitation, and the success of the Veterans Administration Medical Rehabilitation Program.

There was, at the war's end, some skepticism of the value of medical rehabilitation in the Veterans Administration hospitals for veterans of World War I and those of the Regular Army who suffered

from chronic illness and long-standing disabilities. Some physicians feared that young veterans of World War II would soon lose ambition, initiative, and a desire for personal independence through association with older veterans who had developed "hospitalitis" as a result of boredom, frustration and hopelessness. In the veterans hospitals, where comprehensive, dynamic rehabilitation programs are now in operation, the results have been not only revealing but encouraging.

#### DISABILITY AMONG CIVILIANS

Although the focus of attention has been centered on the disabled veteran, the extent of disability among our civilian population is far greater. There were 19,000 amputations among military personnel during World War II, but over 120,000 major amputations during this same period among our civilian population. Approximately 1,500 men were blinded while in military service during the last war, but 60,000 civilians lost their sight during this period. Some 265,000 men were permanently disabled as a result of combat injuries during the war, but 1,250,000 civilians were permanently disabled by disease and accidents in the corresponding four years.

There are some 23,000,000 persons in the United States handicapped to some extent by disease, accidents, maladjustment, or war. One third of all draftees were rejected as unfit, and more than 1,000,000 had to be discharged shortly after induction. In 1946, 10,400,000 persons suffered disabling accidents, and of these, 370,000 were disabled permanently. It is estimated that there are over 7,000,000 persons in the United States disabled by diseases of the heart and arteries, 6,850,000 from rheumatism and arthritis, and 2,600,000 disabled from orthopedic conditions.

These are the numbers, but they cannot tell the story of pain, anxiety, suffering, and all of the vital secondary problems that disease and disability leave in their wake. Aside from pain and tearing personal and family anguish, the economic costs of disease and disability are staggering.

ALTHOUGH it would seem logical that medical rehabilitation would be an important service in every civilian hospital, there has been little or no attempt, until recently, to establish such programs in civilian hospitals. Of the 1,463,714 hos-

pital beds in the United States in 1946, 44 per cent were in general hospitals, but these 641,331 beds cared for over 92 per cent of all patients. Rehabilitation, in varying degrees, has been available in some tuberculosis, mental, and other specialized hospitals, but little provision has been made for dynamic convalescent care and rehabilitation of the over 14,000,000 persons who are patients in general hospitals each year.

#### BELLEVUE HOSPITAL PROGRAM

The first comprehensive, total medical rehabilitation program in any community hospital in this country has recently been inaugurated at Bellevue Hospital in New York. Operated under the professional direction of the Department of Rehabilitation and Physical Medicine of the New York University College of Medicine, the service has bed facilities for 80 patients, and offers a program of physical medicine, physical therapy, occupational therapy, corrective physical rehabilitation, social service, corrective speech, psychologic services, vocational guidance, education, and planned recreation. It operates as a service department to the other departments of the hospital in much the same manner as the x-ray and laboratory, and treats both in-patients and out-patients on reference from the other services of the hospital.

The rehabilitation service in Bellevue Hospital which will be enlarged to 600 beds when the construction planned is completed, is the first step in a plan by the Department of Hospitals of the City of New York to provide all patients in municipal hospitals of the city with medical rehabilitation services. The extent to which rehabilitation has entered into future planning in New York in both public and private hospitals is shown by a recent report of the Hospital Council of Greater New York, in which it was suggested that 25 per cent of the bed capacity of the city's general hospitals should be allocated for convalescence and rehabilitation. This would mean one such bed for each 1,000 of the city's population.

#### OTHER REHABILITATION FACILITIES

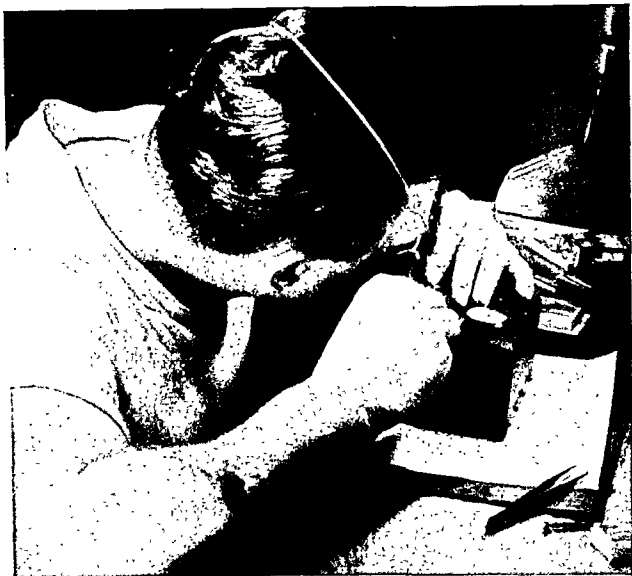
The interest in extending medical rehabilitation services in general hospitals is not limited to New York City or other large urban areas. The Veterans Administration has recently established such services as major departments with bed allocations

in all Veterans Administration hospitals.

The New York State Health Preparedness Commission has recommended that the state should build or acquire and support a chronic disease hospital center contiguous to a general hospital, in close proximity to a medical school, and staffed and operated by contract with such hospital and medical school in each of five geographic regions of the state. They have also recommended that "rehabilitation services for disabled and chronically ill be developed as rapidly as possible in selected general hospitals throughout the state by providing the services of trained personnel and by providing funds for the training of needed personnel in this field." Today, throughout the nation, there are some 150 communities which have expressed interest in establishing rehabilitation services either independently or in conjunction with existing hospitals, medical schools, or community agencies. It is significant, however, that most are following the recommendations of The Baruch Committee On Physical Medicine that such centers be medically directed, and be associated with civilian hospitals and medical schools if possible.

This is the pattern being followed in the Institute of Rehabilitation and Physical Medicine which recently opened as one of the first operating units of the new New York University-Bellevue Medical Center. Patterned after the recommendations of the Baruch Committee, the Institute offers a complete program of physical medicine and rehabilitation, including physical rehabilitation and retraining, psychosocial adjustment, and vocational evaluation and guidance for physically handicapped persons. It provides an integrated program of physical therapy, occupational therapy, physical rehabilitation, social service, vocational guidance and testing, and recreation, designed to teach the patient who has a physical disability "to live within the limits of his disability, but to the hilt of his capabilities." With facilities to care for an in-patient census of 30 and a daily out-patient load of 100, the Institute places special emphasis on retraining in elevation, ambulation, crutch-walking, and the physical skills necessary for the activities inherent in daily living.

THE Institute's service and facilities are available to any patient, either on an in-patient or out-patient basis, who, in the opinion of the referring physicians and the Institute's staff, could benefit



Prevocational work experiences in the hospital provide the basis for later vocational rehabilitation.

from rehabilitation and retraining. It is expected that the majority of cases will be those needing definitive physical medicine or rehabilitation as the result of injuries, arthritis, orthopedic and neurological disabilities, and diseases of the heart and arteries. Special facilities are available for a limited number of paraplegics and hemiplegics. Although the Institute is not prepared to do vocational training of the handicapped per se, special workshops are available for vocational evaluation and guidance and job hardening under medical supervision for arrested tuberculous and cardiac patients. Complete vocational and guidance services are available for all types of persons with physical disabilities.

#### PROSTHETICS SERVICE

One of the special features of the Institute is the Prosthetics Service in which consultation and recommendations are made on the selection, fitting and adjustment of prosthetic devices of all types, and intensive training is given in their use. The

Institute does not manufacture or sell prosthetic devices, but has skilled technicians available for services for all types of amputations, and for the minor adjustments and refittings frequently necessary to make artificial limbs more comfortable and efficient to the wearer.

#### RETRAINING IN PHYSICAL SKILLS

Although we have in this country the finest institutions in the world for definitive medical care and for vocational training, outside of the military services and the Veterans Administration there is but a small handful of civilian agencies and organizations equipped to provide for the patient with a physical disability the necessary retraining in physical skills which are a requisite for later vocational training. The physician in the past has thought too much about the physiological and clinical aspects of the patient's disability. The vocational counselor too frequently has thought only in terms of physical skills which could be utilized



With special devices and proper retraining even the most seriously disabled can be made partially self-sufficient.

vocationally. Between the two, however, there is a wide area through which most physically handicapped persons must go when their definitive medical care is completed but before they are ready to undergo vocational training. In this area lies the physical retraining in skills necessary for the carrying on of the activities inherent in daily living and common to all types of work.

Except in a few isolated instances, the physically handicapped person must be retrained to walk and travel, to care for his daily needs, to use normal methods of transportation, to use ordinary toilet facilities, to apply and remove his own prosthetic devices, to communicate either orally or in writing. These are such simple things that they are frequently overlooked, but the personal, vocational and social success of the handicapped person is de-

pendent upon just such simple factors.

#### DIAGNOSIS AND TREATMENT

The practice of rehabilitation for the physician begins with the belief in the basic philosophy that the doctor's responsibility does not end when the acute illness is ended or surgery is completed; it ends only when the individual is retrained to live and work with what is left. This basic concept of the doctor's responsibility can be achieved only if rehabilitation is considered an integral part of medical service. Any program of rehabilitation is only as sound as the basic medical service of which it is a part. The diagnosis and prognosis must be accurate, for it is upon them that the feasibility of retraining is determined.

In addition to the general diagnostic studies, the medical evaluation of the orthopedically handicapped must include muscle tests, joint range of motion, and tests for the inherent needs in daily living. In the Rehabilitation Service at Bellevue Hospital, a check list of 96 items is used to determine these factors. They include: (1) bed activities, such as moving from place to place in bed, and the ability to sit erect; (2) toilet activities; (3) eating and drinking; (4) the ability to dress and undress, such as tying shoe laces, manipulating buttons, zippers and other fasteners, and applying and removing braces; (5) hand activities, for example, winding a watch, striking a match, and using various door knobs and latches; (6) wheelchair activities, getting from the bed to the wheelchair, the wheelchair to bed, and in and out of the bathtub; (7) elevation activities, which include the needed abilities for walking, climbing, and traveling.

At first glance, such a test list sounds formidable and time consuming, but in reality, the information may be easily obtained by a therapist, nurse, a well-trained volunteer or a member of the patient's family. From special check sheets used for charting the activity accomplishments, information is readily available both on the status of the patient at the time of admittance and his progress while undergoing rehabilitation.

The use of such a check list is particularly helpful if personnel are not available to do definitive muscle testing and accurate range of motion determination, for the daily activities test can be completed in the hospital, the physician's office, or the patient's home. The subsequent training program is designed to teach the patient the various skills and activities which he cannot perform.

In Bellevue Hospital and the Institute of Rehabilitation, after the basic medical work-up, and the range of motion muscle and needs of daily living test, the physician, in conference with other staff members, prescribes a five-hour-a-day program for the patient. These prescribed activities include training in the ambulation and elevation rooms and the remedial gymnasium, occupational therapy, physical therapy, speech therapy, or any other activity which may be helpful in meeting the specific needs of the patient.

In a comprehensive rehabilitation program, vocational guidance specialists should also be available to do guidance and testing, in order that the patient may be started on a prevocational exploratory and work testing program as soon as it is medically feasible. However, good basic rehabilitation



For some groups, such as the cerebral palsied, rehabilitation is a long and tedious process but progress can be made.

can be carried out with the personnel available in the ordinary general hospital, if such a program is properly organized, supervised, and prescribed by the physician.

#### THE HEMIPLEGIC

THE rehabilitation of the hemiplegic is a typical example. There are a number of simple progressive procedures in the rehabilitation of the hemiplegic, one of the commonest disabilities seen in general practice. In the early stages of treatment, the following procedures should be instituted to prevent deformities: (1) Footboard or posterior leg splint to prevent foot drop; (2) sandbags to prevent outward rotation of the affected leg; (3) a pillow in the axilla to prevent adduction of the shoulder; (4) quadriceps setting to maintain muscle strength. All of these procedures are relatively simple and require no special equipment. Their use, however, will prevent crippling anatomical deformities and hasten the rehabilitation of the patient.

The next procedure indicated is the institution of pulley therapy. This can be done very simply with a small pulley attached to a goose-neck pipe over the head



In advising his patient on the selection of a prosthetic device, the physician must realize that not all limbs are suitable for all amputees.

*Photographs from: New York University Institute of Rehabilitation and Physical Medicine.*

of the bed, using the ordinary clothes-line rope with a one-inch webbing for the hand loop. With the stretching and passive exercise provided by pulley therapy, the range of motion can be increased and adhesions prevented.

Pulley therapy has the advantage over the usual stretching exercises that are done passively, for, the patient, knowing his own pain threshold, will proceed to fully-tolerated motion much more quickly. Pulley therapy can also be used to aid in the re-establishment of reciprocal motion patterns.

The patient, at this stage, should be encouraged to sit erect in order to re-establish balance. Speech therapy, if indicated, should be instituted at this time. In the absence of a trained speech therapist, the speech re-education can be started under medical supervision by any teacher who has had some experience in this field. In the aphasic, it is well for the physician to point out

to the patient and family the nature of the condition in order that the inability to use the tools of language may not be interpreted as loss or diminishing of the ability to think and reason.

The next progressive stage in retraining the hemiplegic is ambulation, which should be started by: (1) The practice of balance in the standing position progressing the parallel bars; (2) the teaching of a heel-and-toe gait to minimize clonus and to re-establish normal walking habits stressing reciprocal motion; (3) a short leg brace will be needed in approximately half of all cases to correct foot drop. All of the equipment for training in ambulation is simple and readily obtained by the general practitioner. If parallel bars are not available, two kitchen chairs may be used.

In the advanced stages of retraining, ambulation is continued with: (1) Instruction in crutch walking, starting usually with the alternate four point gait;

(2) teaching elevation, stressing climbing steps, curbs, stairs, and ramps. Concurrently with training in ambulation, attention should be given to retraining in the activities of self-care and daily living.

Obviously, the physician himself cannot undertake the actual administration of the retraining, but the therapist, nurse, volunteer or even a member of the family can conduct the activities under his supervision. With such a program, many of the complications usually following apoplexy can be avoided and a great deal of time and ability salvaged.

#### THE AMPUTEE

Although the general practitioner is forced to call upon the services of medical specialists when dealing with amputee patients, he must assume the responsibility for preparing his patient physically and psychologically for the amputation and to see that the patient has the proper prosthetic device adequately fitted and is trained in its use.

One phase of the management of the amputee to which the physician should give particular attention, is the immediate postoperative period while the stump is being shrunk in preparation for both crutch walking and the later use of the artificial limb, and measures should be taken to prevent anatomical deformities.

For example, it is not an uncommon practice in many hospitals, following an above-knee amputation, to elevate the stump upon a pillow. However, if such elevation is maintained for as long as two weeks, a flexion deformity will occur which will take from six to eight weeks of arduous, painful work before sufficient hyperextension can be regained for satisfactory walking.

IN advising his patient on the selection of a prosthetic device, the compensation physician must be aware of the fact that not all limbs are suitable for all amputees. In fact, he must realize that not all amputees can wear artificial limbs profitably. It has been noted on the rehabilitation service at the New York University College of Medicine that an above-knee amputee in the older age group cannot, as a rule, profitably be trained to use a prosthesis if he is unable to perform a swing-through gait on crutches.

The physician must point out objectively to the patient those skills which the patient can expect to achieve with proper training, and those skills which the patient has little chance of ever regaining. Extreme caution must be taken in the latter, however, as it is unwise to tell a patient "he can't do," for this cannot be determined, in most cases, until the patient has had adequate training. Training is absolutely essential if the amputee is to be successfully rehabilitated.

Regardless of the type of disability, the responsibility of the physician, the hospital or the clinic to the patient cannot end when the acute injury has

been cared for. It ends only when the physician, the hospital or the clinic has taken the responsibility for seeing that proper referral has been made to those agencies and institutions which are equipped to rehabilitate and retrain the patient with a residual physical disability; medical care is not complete until the patient has been trained to live and work with what he has left.

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# Lung Pathology and Hemoptysis in Children

## EFFECT OF NON-OPAQUE FOREIGN BODIES

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THIS dissertation and the four clinical case reports being presented are primarily: (1) to call to your attention the importance of carefully taking a history in all children who suddenly develop choking, gagging, coughing, or wheezing followed by a symptomless period, and who later evidence signs of some lung pathology; (2) to remind you what might happen to a child if you fail to heed this advice, and to help you to realize the significance of the symptoms; (3) to stimulate you to act early in every case in which you suspect that a child has aspirated a foreign body, and to institute a diagnostic bronchoscopic procedure.

I have often made the statement that the most illiterate or ignorant parents will frequently make a correct diagnosis of their ailing child if one only will take the time to listen rather than to ignore them, and mistakenly proceed with symptomatic treatment.

There are numerous causes for hemoptysis in children, probably the most common being bronchiectasis and lung abscess of foreign body origin. It is my desire to call to your attention the horrible experiences an innocent, helpless child can suffer due, in many instances, to a

physician who has failed to take a careful history, and, through carelessness, has overlooked the fact that the child might have aspirated a foreign body into a bronchus. In every case of lung pathology in which there is any suspicion of a foreign body as etiologic agent, a bronchoscopic examination is indicated. Early diagnosis and removal of the foreign body, either bronchoscopically or by the chest surgeon, is the only treatment which will bring about a rapid convalescence.

In three of the clinical case reports herein described, the physicians who were called to examine and treat the children are, to my personal knowledge, capable physicians, and they probably could be held responsible for the physical pain and suffering endured by these children and the mental suffering and expense to the parents. However, many children are not seen early by the physician, and the only treatment they receive for chronic productive cough is at the hands of the druggist, neighbors, or friends. Not until the child has coughed up blood in some quantity is a doctor called. This was the story in one of the clinical cases to be described.

A carefully taken history should make the physician immediately suspect the cause of the symptoms presented might be the result

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of an overlooked exogenous foreign body. The next order of business should be a thorough general physical examination and laboratory examinations including x-ray pictures. A bronchoscopic examination should follow next, secretions collected for study if present, iodized oil instilled for bronchography if indicated, and other measures instituted when necessary.

#### CLINICAL REPORTS

##### CASE NO. I

White, male, 10 years old, admitted to St. Vincents Infirmary July 24, 1939, whose chief complaint was chronic, persistent cough with recent expectoration of large amounts of blood. For some months expectoration was streaked with blood, but recently the bleeding became rather profuse. The boy was in very good health until eighteen months before when, while playing in a small cedar tree, he suddenly became choked on a small piece of cedar he had in his mouth. Gagging and choking excited him so that he fell from the tree, injuring his side. He was taken to a physician who ignored the history and proceeded to strap his chest, stating that several ribs had been broken by the fall. He assured the mother the twig had either been swallowed or coughed out.

Soon after, the child developed a cough which at times was streaked with blood and for which the physician prescribed. Not until eighteen months following the accident, when the bleeding became profuse, was the child brought to Little Rock and admitted to a hospital. The boy was not critically ill, and a general physical examination was negative. A diagnostic bronchoscopy was done and the entire tracheobronchial tree was visualized as far as possible through a bronchoscope. Scant, foul-smelling blood tinged secretions were aspirated for study. A small amount of iodized oil was instilled for the purpose of bronchography (see Figure 1).

Surgical treatment was recommended but refused, and the child was returned home. A few months later the child expelled a piece of cedar following a violent coughing bout, and



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subsequently made an uneventful recovery. The piece of cedar was sent to me, and it appeared as though it had just been removed from the tree. I have seen this boy several times the past few years, and he has had no further respiratory symptoms.

*Comment*—Had bronchoscopy been instituted early it is highly possible that the foreign body would have been visualized and removed. The mother informed the physician what was wrong, but acting on impulse rather than better judgment he ignored the history and instituted symptomatic treatment. The child paid the price.

*X-ray Report 7/24/39*—Two films of this patient's chest were taken, one a posteroanterior, the other a left lateral exposure. These films show iodized oil injected into one of the branches of the left main bronchus reaching the anterior inferior part of the left lower lobe. This does not show any signs of bronchial dilatation suggesting a bronchiectasis. It does show, located very near the surface of the lung,

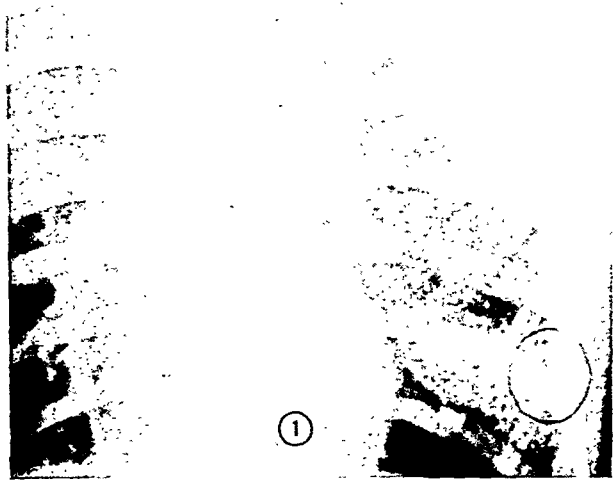


Figure 1. Roentgenogram of patient in Case 1.

a spherical area of iodized oil, about 1.5 cm. in diameter. The film suggests there might be a small excavation at that location. Except for this one small area, these films were entirely negative for signs of infection or other disease. The cause for this shadow is unknown (see Figure 1).

#### CASE NO. 2

White, male, 5 years old, admitted to the Arkansas Children's Home and Hospital in November, 1944. Chief complaint was cough of several months' duration. The onset was not unusual according to the physician who was called to treat the child and who referred him to the hospital for further study. All routine examinations were accomplished and a diagnosis of chronic tracheobronchitis was made. Treatment was given and the child was discharged from the hospital one week later.

In May, 1946, the child was re-admitted with fever, cough, and pains in the right side of the chest. Dr. John Agar did a diagnostic bronchoscopy and reported the right main bronchus to be filled with foul-smelling, thick pus. The

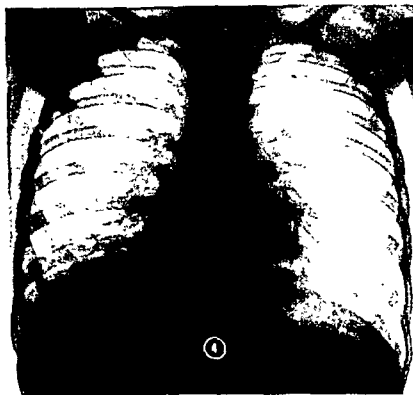
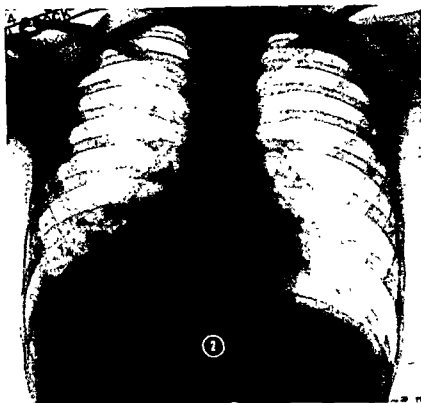
mucous membrane was thickened, inflamed, and a small amount of blood was noted. A diagnosis of bronchiectasis was made, treatment was given, care was outlined, and the child was discharged from the hospital with instructions to return for further observation.

The third admittance was December, 1946. The cough was very productive, the sputum was blood streaked, and had a very foul odor. I was called in consultation January 1, 1947. After a review of the chart I repeated the diagnostic bronchoscopic procedure. Following aspiration, iodized oil was instilled for bronchography. After a review of these films a lobectomy was recommended. This procedure was carried out by Dr. Harvey Shipp on January 16, 1947, and a rice straw head was recovered at this time.

*Comment*—When the rice straw head was recovered at the time of operation and later shown to the parents and an older brother, the true story concerning the etiology was confessed. Several months preceding the child's first admittance to the hospital, he and his brother were riding on a rice wagon against the advice of their father, and it so happened that the younger child aspirated a rice straw head and nearly choked to death. Having been warned that they would receive a good whipping if they were ever caught riding rice wagons, they had never divulged the incident to their parents. In this particular case it was impossible to obtain an accurate history at a time early enough to make proper recommendations (see Figures 2 to 5).

#### CASE NO. 3

White, female, 10 years old, admitted to St. Vincents Infirmary August 8, 1947, complaining of expectorating large quantities of blood. She gave a history of being in good health until three months before when she began having an elevation of temperature as high as 104°F., accompanied by nausea. She had an appendectomy at this time with no relief of symptoms. About two weeks later she expectorated a small amount of blood, and then developed a non-



Figures 2 to 5. Roentgenograms of patient in Case 2.

productive cough which persisted until the date of admission to St. Vincents Infirmary, at which time she was expectorating large quantities of blood.

The mother stated that her daughter had been returning home from school accompanied by her teacher, and that she had a wild wheat head in her mouth which she either aspirated or swallowed. She immediately began gagging and choking, but shortly thereafter her symptoms abated, and her mother was advised by a physician that the child had

simply choked on the piece of wheat and swallowed it. This was about one week prior to onset of nausea and temperature elevation.

On the date of admission to the hospital the child was pale, cyanotic, and expectorating considerable blood. There was dullness to percussion over the right lung base, and râles were heard in this area. The hemoglobin was 49.8 per cent; R.B.C. 2,800,000; W.B.C. 17,300; temperature 104°F.; pulse rate 160. She received blood transfusions, plasma, and penicillin.

Four days after admission a diagnostic bron-

Laboratory studies revealed a white count of 18,900; differential of: 3 stabs, 70 polys, 27 lymphs. The red count was 4,350,000 with a 75 per cent hemoglobin. Urinalysis was negative. X-ray examination revealed a widening of the hilar shadow on the left side with strands of fibrosis and hyperemia extending outward from this area. A bronchoscopic examination was done and purulent material was found draining from the left upper lobe bronchus. Lipiodol instillation was carried out and an x-ray examination was made, which revealed a massive cylindrical bronchiectasis limited to the lingula of the left upper lobe with abscess cavities lying adjacent to the anterior chest wall in the region of the inflammatory mass. Sputum examination revealed large numbers of staphylococci.

Incision of the tumor mass was made down to the intercostal muscle bundles and biopsy of the tissue was taken which was reported as edematous and inflammatory tissue. No frank pus was obtained. This boy was placed on aerosol streptomycin inhalation. His general condition improved, and temperature returned to normal within approximately one week. The character of the sputum cleared and his cough disappeared. His appetite improved and he began to gain weight. Due to the fact that there was slight drainage and delayed healing of the incised tumor mass on the anterior chest wall, he was sent home for a period of two weeks, after which he was supposed to return for lobectomy.

This patient was re-admitted to the hospital

on October 4, 1947, in a very markedly improved condition. His cough had subsided and he had no fever, but the bronchiectatic cavity still persisted. On October 7, segmental resection of the lingula was carried out without difficulty by Dr. Harvey Shipp. Lying within the bronchiectatic abscess against the anterior wall was found a cedar leaf approximately one inch in length.

Postoperative recovery was uneventful and without complication. The patient was discharged from the hospital on October 25, 1947. At the present time all symptoms have subsided, and the patient is entirely well. He returned to school on November 17 (see Figures 10 and 11).

*Comment*—This was a case of a non-opaque foreign body lodged in the lingular lobe of the left lung, a most unusual site for a foreign body of this nature. History of the aspiration of this foreign body was not obtained until a week following admission to the hospital when the mother happened to recall the incident. This case again illustrates very well the need for careful history in all cases of persistent lung infection, and for utilizing all available diagnostic procedures.

#### CONCLUSIONS

1. Carefully taken histories are of paramount importance in all cases of lung pathology.
2. Early bronchoscopy and bronchography are of inestimable value in cases of aspirated non-opaque foreign bodies.

#### WRIST-BONE FILMS REVEAL DISEASE CONDITIONS IN CHILDREN

**R**OENTGENOGRAMS of the wrists are a valuable aid in diagnosis of children, a study published in the *American Journal of Diseases of Children* by Dr. M. G. Peterman, Dr. W. B. Frey and Dr. J. D. Kaster indicates. Such conditions as mental retardation, thyroid deficiency, lead poisoning, and other abnormal processes can be discovered by examining the maturation of the wrist bones.

A study was made of x-ray films of the wrists of 684 children. It was noted that delayed ossification was associated with mental retardation, congenital heart disease, cerebral birth injury, pancreas disease, and hypothyroidism. Other conditions uncovered by the technic include syphilis, tumors, rickets, and scurvy. In the study, the films showed evidence of a pathologic process in 69 cases.

Delayed ossification, brought to light in the x-rays, can result in early discovery of diseases in clinically obscure stages. In borderline cases of hypothyroidism, for example, retarded bone maturation nearly always is present.

# Digestive Diseases

WALTMAN WALTERS\*

MAYO CLINIC, ROCHESTER

It is a pleasure for me to be here again and to present to you some cases of digestive diseases. I have been fortunate indeed in having the help of Dr. McNally and Dr. Stoner, who have briefed these cases in an excellent manner. We plan to put on a combined clinic for you to see how it works out.

We have 4 interesting cases. Dr. McNally, will you please briefly outline the first case?

DR. McNALLY: This is a 72-year-old white man whose general condition is only fair. He has a moderate amount of cerebral arteriosclerosis.

For twenty or thirty years he has had "stomach trouble." He claims to have excessive amounts of gas and heartburn. This is relieved primarily by the ingestion of milk and baking soda. Three days before admission he first noticed tarry stools as well as severe, constant epigastric pain.

On admission he was found to have moderate secondary anemia, the hemoglobin content being 10 gm. per 100 cc. of blood; the stools were tarry in color and positive for blood. He had some tenderness in the epigastric region, but no masses were palpable. A roentgenogram revealed a prepyloric lesion on the lesser curvature. The patient has responded to medical therapy.

DR. WALTERS: Will you describe the roentgenogram of the stomach, please, Dr. Stoner?

DR. STONER: There is a lesion in the prepyloric region of the stomach. There is a filling defect present.

DR. WALTERS: This 72-year-old gentleman gives a history of dyspepsia of twenty years' duration. He has known that he has had disease of the gallbladder and gallstones for a long time, he says, but it is just recently that he has been aware of

the lesion in his stomach, the diagnosis being made on examination.

You will note that Dr. McNally spoke of his intestinal bleeding, his marked secondary anemia. He has 2,500,000 red blood cells and 11 gm. of hemoglobin.

The patient and I have talked together for a few minutes and I want him to talk with you because I want to have you help me decide what you think is the best thing for this man to have done. There is one additional study that would have been helpful, namely, a determination of gastric acids. This has not been possible because of a little difficulty in cooperation and also because of some gastric retention. Such a determination would have been helpful, because if the acids are minimal or absent the probabilities are that the lesion is neoplastic. On the other hand, if the acidity is high, that is, more than 45 clinical units of free hydrochloric acid, the probabilities are only 5 per cent that the lesion is malignant. That is important in this case, because we have to decide how this 72-year-old man is going to be treated. We have made the diagnosis of a prepyloric gastric lesion.

How have you gotten along in the hospital under the treatment you have had?

PATIENT: Just fine. I am getting along fine.

DR. WALTERS: Do you think you have had enough trouble so you want to be operated on?

PATIENT: No, I can't be operated on.

DR. WALTERS: Do you think if we could assure you that after an operation you wouldn't have any more trouble with your stomach you would be willing to be operated upon?

PATIENT: Why, yes, that is different.

DR. WALTERS: I wanted you to hear him talk in order to note his weakness and senility.

Nothing at all abnormal is to be felt in the examination of his abdomen. The patient does not work, is not active physically, and under

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Presented November 11, 1948, before the meeting of the Interstate Postgraduate Medical Association of North America, Cleveland, Ohio.



WALTMAN WALTERS

these circumstances he gets on fairly well.

I am sure you can understand why I had him talk to you. He is arteriosclerotic, he is not working, and the high risk of operation in this case is questionable in its justification, because (1) he doesn't want it, and (2) after it has been done at an unusually increased risk because of his arteriosclerotic, weakened, anemic condition, the chances of his being productive in any way are not good; therefore I could not advise this man under these circumstances to be operated upon.

On the other hand, from the standpoint of the general principles of treatment, if this patient were in better physical condition and if he could be operated upon with a reasonable risk, he should be operated upon, for two reasons. First, in spite of the fact that we do not know what the values for his gastric acids are, he has a gastric ulcer which, as a rule, can be successfully removed by operation, and second, there is a 20 per cent chance that the lesion is an ulcerating carcinoma whose cure depends on early operation.

In regard to gastric ulcer I want to call your attention to two things. First is the risk, and second is the effectiveness of partial gastrectomy for

gastric ulcer. If the removal of a benign chronic ulcerating lesion in the stomach can be done at a risk of, say, 1 or 2 per cent, and if with this operation the results are excellent in practically every case (I have never seen a recurrence of a gastric ulcer after a properly performed partial gastrectomy), then there seems to be no reason at all why one should deny the patient with a chronic recurring gastric ulcer whose condition will permit an operation, the opportunity of cure by means of partial gastrectomy.

THE possibility that a gastric ulcer may be malignant should always be kept in mind. In a study of a series of cancers of the stomach which my colleagues, Dr. Gray, Dr. Priestley, and I, with the assistance of Dr. Everett Lewis, made several years ago, almost one-third of the patients operated upon for cancer of the stomach gave an ulcer-like history, and the worst part of it was that, of that group of patients who had ulcer-like symptoms and yet had cancers of the stomach, more than two-thirds had temporarily responded effectively to medical treatment.

It used to be said that the response to medical treatment of a peptic ulcer (a term I don't like because there is a decided difference between gastric ulcer and duodenal ulcer) can be used as an indication of whether the lesion is benign or malignant. That is not true, as you see in the case of a lesion in the stomach shown in Figure 1.

I want to stop for a moment and speak about the malignant lesions of the stomach, because my colleagues and I are happy over the results reported last year. When we first started doing total gastrectomies fifteen years ago, the mortality rate was 25 to 35 per cent (last year at the clinic it was 5.3 per cent) whereas the mortality rate from partial gastrectomy in the large series I just mentioned averaged 14 per cent (last year it was 6.4 per cent). What is the explanation for that? Improvement in technic? Well, possibly. Greater experience? Probably. Other factors are the better preparation of patients for operation by the administration of blood, proteins, vitamins, and so forth, and probably a little better understanding of the abnormal physiologic changes occurring subsequent to an operation of this magnitude when a patient has symptoms of gastric retention, hypoproteinemia, anemia, and infection which we sometimes see after an extensive operation.

# CARCINOMA OF THE STOMACH FIRST SYMPTOM EXPERIENCED

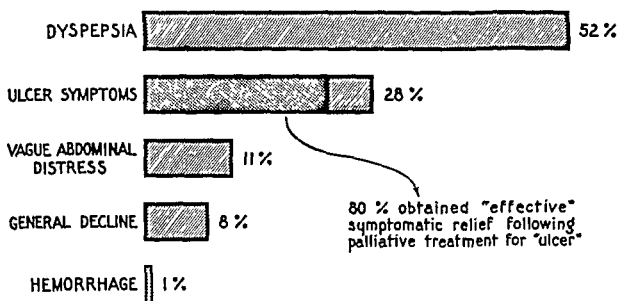


Figure 1. The figure refers to the first presumptive symptom caused by the gastric carcinoma. In over 50 per cent of the cases, indigestion was the first disturbance noted; in almost 30 per cent, it was recurrent pain of ulcer-like character. The vagueness of the early symptoms is one of the reasons for late diagnosis.

We will now discuss the next 2 cases. Dr. McNally, let me ask you one or two questions in order to save time.

This lady is 74 years of age. She has, as you see, a marked degree of jaundice. Dr. McNally, did this jaundice appear after pain or did it occur with increasing intensity and without pain?

DR. McNALLY: The latter, with increasing intensity.

DR. WALTERS: Painless, progressive jaundice in a woman 74 years of age.

DR. McNALLY: That is right.

DR. WALTERS: What are the next two or three very important things we want to find out?

DR. McNALLY: The color of her urine and stools.

DR. WALTERS: What were those colors?

DR. McNALLY: The urine became progressively darker and the stools progressively lighter until they were clay-colored in appearance.

DR. WALTERS: In the physical examination, what of importance is to be looked for?

DR. McNALLY: The possibility of a palpable mass in the abdomen, which was found.

DR. WALTERS: In what position?

DR. McNALLY: In the right upper quadrant extending almost to the umbilicus.

DR. WALTERS: The size and shape of the mass?

DR. McNALLY: It was about 6 cm. in diameter and was globoid in shape, firm and nontender, and moved with respiration. It was believed to be a distended gallbladder.

DR. WALTERS: What is your diagnosis?

DR. McNALLY: This patient came into the hospital the day before yesterday, and it is felt that she possibly has a carcinoma of the head of the pancreas.

DR. WALTERS: What would your treatment be?

DR. McNALLY: I think the treatment in this case is exploration to determine the possibility of pathologic changes in the pancreas. If it is a malignant lesion, or if it represents possibly chronic pancreatitis with obstruction of the common duct, a short-circuiting, I think, would be indicated.

DR. WALTERS: Good! That is exactly what I think, too. You wouldn't attempt to do a radical resection of the head of the pancreas? Let us say there is pretty definitely a hard tumor in the head of the pancreas, would you or wouldn't you try to do a radical resection of the head of the pancreas?

DR. McNALLY: I suppose I should have qualified my statement by saying that without evidence of extension to other viscera or nodes in the immediate region, I might change my stand, but I think possibly in view of her age I would do a biopsy

and a short-circuiting operation.

DR. WALTERS: Good!

One can notice the scratch marks on her abdomen, and one can feel the globular mass which Dr. McNally described. One of my colleagues, Dr. Eusterman, several years ago called attention to the fact that sometimes when one cannot feel these globular distended gallbladders, if the patient is given a little sodium amytal intravenously (amobarbital sodium) there is an increase in relaxation of the abdominal wall muscles and one can feel about 60 per cent of the distended gallbladder.

I would like to say a word or two about the treatment of malignant lesions of the head of the pancreas. My colleagues, Drs. Waugh and Clagett, have recently reported 38 cases of radical resection of the head of the pancreas for carcinoma. Roughly, the patients can be divided into those with cancer of the head of the pancreas and those with cancer of the ampulla. In cancer of the head of the pancreas, the prolongation of life beyond that associated with the short-circuiting operation which Dr. McNally spoke of does not warrant, in most cases, the very great increase in the risk of radical resection.

As a matter of fact, in 11 of the cases in which radical resection was done for carcinoma of the head of the pancreas and in which the patient obtained only palliation, the subsequent life averaged eight months, whereas in 3 patients with carcinoma of the ampulla of Vater, palliation was obtained for an average of thirteen months. Of the 3 patients with carcinoma of the head of the pancreas that were still alive, the average survival was eighteen months; of the 5 patients with carcinoma of the ampulla of Vater still living, the average survival was twenty-eight months.

If you speculate on the reasons for that you will probably understand it. I say "probably" because we have no definite evidence yet. When one deals with a neoplasm in a ductless gland, for which a subtotal removal of the gland is done, I think that there will always be a high incidence of recurrence.

Now, Dr. McNally, the next patient.

DR. McNALLY: This is a 70-year-old white woman who was admitted to City Hospital in August with a history of vaginal bleeding of three years' duration. Biopsy of the cervix revealed a partially differentiated squamous-cell carcinoma. She received a course of radiation therapy and was read-

mitted to the hospital with the development of jaundice.

During her first admission she underwent blood transfusion four times and received one unit of plasma.

DR. WALTERS: This lady is jaundiced. She has bile in her stools. She does not have much bile in her urine, which rather definitely puts the jaundice on the basis of an intrahepatic block rather than an extrahepatic block. However, with the history which you have heard regarding the lesion of her cervix, with recurrence, and with a mass in the right upper quadrant of the abdomen, the probabilities are that we are dealing with a metastatic lesion. Differential diagnosis, peritoneoscopy if one wishes, or biopsy of the liver would tell whether the lesion is intrahepatic or extrahepatic.

Treatment in either event is difficult. Therefore, I think the best thing to do is to carry on the present treatment. The jaundice is receding. The mass is quite evident and she has fluid in the abdomen.

Dr. McNally, can you tell us briefly what the symptoms of the next patient are?

DR. McNALLY: This is a 22-year-old colored girl who had her first attack of epigastric pain, which was in the right upper quadrant and sharp, after ingestion of fatty foods at times or, at other times, during the night with no antecedent cause. She has had an aversion to fatty foods for four years.

She was in the hospital once last year, where she underwent a work-up, and again this year, for the same complaint with a further work-up.

DR. WALTERS: Dr. Stoner, please point out what there is of significance in the roentgenogram of her abdomen. What do you think that shadow represents?

DR. STONER: Calcification in the head of the pancreas.

DR. WALTERS: Good. Thank you.

We have a young woman with a history of frequent attacks of right upper quadrant pain which have been disabling at times. Also, perhaps you notice she has a normally functioning gallbladder on roentgenologic examination of the gallbladder which has been repeated recently, and again the results are negative.

(To the patient) I want you to tell me where that pain was when you had it. (She has a little pelvic infection, too, but let's disregard that.) Is the pain bad?

PATIENT: The pain is bad.

DR. WALTERS: Does it go through to the back?

PATIENT: It goes through and into the back.

DR. WALTERS: There are no abnormal masses to be felt in the examination of her abdomen. There is some tenderness to pressure in the epigastrium and in the right upper quadrant. Has it been pretty sore?

PATIENT: Yes.

DR. WALTERS: Can you eat everything you want?

PATIENT: No.

DR. WALTERS: What can't you eat?

PATIENT: Fatty foods and starch.

DR. WALTERS: Can you eat raw apples without experiencing pain?

PATIENT: No, I don't eat apples.

DR. WALTERS: Cabbage?

PATIENT: No.

DR. WALTERS: Onions?

PATIENT: No.

DR. WALTERS: Does the urine or the stool change in color when you have the pain?

PATIENT: Yes, sometimes the stool changes.

DR. WALTERS: What color is it?

PATIENT: Light yellow.

DR. WALTERS: Does it seem to have little frothy bubbles in it at any time?

PATIENT: No, I don't think so.

DR. WALTERS: There are three things about pancreatitis that are worth knowing. First of all, in the acute phase the patient is sicker than if he has acute cholecystitis. Secondly, the attacks of pain, instead of lasting for a few hours, as in cholecystitis, sometimes last for days in pancreatitis. Usually the patient with pancreatitis is exquisitely tender to pressure in the epigastrium and has a lemon yellow tinge to the skin, and in the cases of acute pancreatitis there is an increase in the serum amylase and serum lipase. The serum amylase continues elevated for several days, usually reaching a value as high as 300 or 400, and I have seen some cases in which it reached a value of 1,000 units.

CHRONIC pancreatitis is something else again. The diagnosis of chronic pancreatitis in a young girl like this is certain and easy in the light of the excellent study which Dr. McNally presented to you and in the presence of roentgenograms showing the calcification in the vicinity of the head of the pancreas. Sometimes the calcification is not present, however.

The cholecystogram helps one to distinguish be-

tween the attack due to cholecystitis and the one due to pancreatitis, although occasionally they may be associated. In point of fact, a recently reported study by my colleagues, Dr. Comfort, Dr. Gam-bill, and Dr. Baggenstoss, of 29 patients who had pancreatitis without cholecystitis and an equal number, approximately, who had pancreatitis with cholecystitis, disclosed many similarities and remarkably few dissimilarities. The anatomic and histopathologic features are essentially the same with interstitial fibrosis, necrosis, cyst and abscess formation, and deposition of calcium occurring in both. It involves males of all ages more frequently than females, and alcohol is one of the etiologic factors.

In chronic pancreatitis without calcification, how can a diagnosis be made? First of all, it is always important to exclude the possibility of an associated cholecystitis or, if the gallbladder has been removed, of a stone in the common duct that is causing the pain, even though the patient is not jaundiced. One-third of all the patients that I have operated upon for stones in the common duct have never been jaundiced, and 2 out of 3 have never had chills and fever; that means that one-third of the patients in whom I have removed stones from the common duct have never had chills or fever or jaundice. Hence, stone in the common duct must be excluded in the patient who has symptoms suggesting pancreatitis.

When excluded, unfortunately, even though the choledochogram shows an absence of stones in the duct after that operation, the patient may continue to have attacks of pain. What is to be done for it? What is being done for this young lady? Restriction of fats and starches, a high-protein diet, and abstinence from alcohol are indicated. Recently Dr. Lundy and the neurosurgeons at the clinic have found that if the injection of dolamin solution into the splanchnic nerves reproduces the pain that the patient with pancreatitis or with cancer of the head of the pancreas has been experiencing, then resection of these splanchnic nerves affords relief of the pain in many of the cases. Too short a time has elapsed since this procedure has been done to determine the permanency of the result.

Prolonged external drainage of the common bile duct is frequently valuable in relieving the severe attacks of pain associated with recurring pancreatitis and so is internal drainage by means of an anastomosis between the common duct and the duodenum.

# The Treatment of Hematologic Disorders

CYRUS C. STURGIS\*

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THERE are four blood diseases for which new and important methods of treatment have recently been introduced. They are: (1) pernicious anemia, (2) Hodgkin's disease, (3) leukemia, and (4) polycythemia vera. It is my intention to discuss, first, the most effective forms of therapy for these various diseases as demonstrated by their effects on many patients over a long interval and, second, to comment on the possible advantages of the newer forms of treatment.

## PERNICIOUS ANEMIA

Prior to 1926 pernicious anemia was regarded as a uniformly fatal disease. This was undoubtedly the correct view at that time, for it could not be demonstrated since the malady was first described that any treatment which had been introduced in the preceding seventy-seven years did actually prolong the life of a patient for a single day. Since then, with the evolution of treatment from the ingestion of a quarter of a pound of cooked liver five to seven times a week, to the present-day use of refined liver extract, ample opportunity has been afforded to evaluate and determine definitely the optimum therapeutic management of this disease.

With the proper use of modern antipernicious anemia medication it is now possible for such patients to live out their normal span of life. It is generally agreed that the most effective current treatment is the intramuscular injection of refined

liver extract, 1 cc. (15 units), three times weekly until the red blood cell count is 3,000,000 per cubic millimeter. The dosage should then be reduced to 1 cc. (15 units) twice weekly, and continued in this amount until the red blood cell count is 4,500,000 per cubic millimeter for women, and 5,000,000 per cubic millimeter for men. Following this, a maintenance dose of 1 cc. (15 units) should be given intramuscularly every two weeks, or 2 cc. (30 units) once a month.

This dosage should be doubled when there is a progression in the neurologic manifestations, or a persistence of the glossitis. Furthermore, if at any time an infection develops, even such a minor one as an ordinary "cold," the dose likewise should be doubled as long as the infection persists. There is evidence also that in elderly patients, a larger dose of liver extract is sometimes necessary, and hence it may be advisable to increase the standard dosage in such patients 50 to 100 per cent.

There is no convincing proof that any additional treatment is ordinarily necessary in patients with this disorder. Hence the routine use of crude liver extracts, vitamins of various sorts, dilute hydrochloric acid, or other possible adjuvants is not indicated. The main principles in the guidance of therapy are: (1) be certain that the patient has pernicious anemia, (2) administer an adequate amount of a refined and potent liver extract in order to maintain the red blood cell count well within the limits of normal.

In a few patients, the regularly observed transient lag of the hemoglobin behind the increase in the red blood cell count will persist for an undue time. If this is true, one would suspect that the

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patient has a chronic loss of blood, usually due to bleeding from the gastrointestinal tract or the uterus. Search should be made and the complication, if discovered, treated in accordance with its nature. In addition, it may be indicated to administer iron in the form of 0.3 to 0.6 gm. of ferrous sulfate t.i.d., before meals.

Another form of therapy which is sometimes indicated is the use of blood transfusions in an emergency. This may occur when a patient is seen for the first time with a severe anemia which may possibly prove fatal before the two or three days elapse prior to the time when the antipernicious anemia medication becomes effective. Such patients should be given 500 to 800 cc. of blood, and this should be repeated within twenty-four hours, or even sooner if the need warrants it. The only other therapeutic agent to consider is the administration of 1 cc. of crystacillin (300,000 units) to combat the lethal effect of a complicating infection such as pneumonia. We must take into account the occasional development of such a condition. due to a reduced resistance of a patient with a severe anemia.



CYRUS C. STURGIS

## FOLIC ACID

SINCE the introduction of folic acid as a therapeutic agent in patients with pernicious anemia,<sup>1</sup> a sufficient number have been treated with this preparation to permit definite conclusions concerning its therapeutic efficacy. In the first place, it has absolutely no effect in any type of anemia except a macrocytic anemia with a megaloblastic bone marrow. This includes pernicious anemia; the anemia in a great majority of patients with sprue; the anemia observed following total gastrectomy, intestinal anastomoses, and intestinal stenosis; the macrocytic anemia of pregnancy; the anemia associated with dietary deficiencies as "exogenous" pernicious anemia, pellagra; tropical anemia; the megaloblastic anemia of infancy; and the anemia due to fish tapeworm infestation. The macrocytic anemia sometimes observed in widespread liver disease is not ordinarily associated with a megaloblastic bone marrow.

Also, the following statement appears to have been established beyond the question of a doubt. While it is highly effective in the treatment of the anemia of true addisonian pernicious anemia, *it does not control the neurologic manifestations of this disorder.* In fact, there are some who believe

that folic acid actually accelerates the progression of the lesions in the nervous system. It is my advice, therefore, that folic acid be employed only in the macrocytic anemias with a megaloblastic bone marrow *in which there are no neurologic complications.* Its possible ill effects on the nervous system in patients with pernicious anemia contraindicate its use even when given in combination with liver extract. This would exclude only true addisonian pernicious anemia, and permit the use of the antianemia substance in all of the other types listed. It has two great advantages, namely (1) it is potent when taken orally, and (2) it can be given to patients who have become allergic to liver extract.

The dose of folic acid is 10 to 15 mg. daily, either orally or intramuscularly, until the blood is normal, and then 5 to 10 mg. daily as a maintenance dose.<sup>2</sup>

VITAMIN B<sub>12</sub>

A new factor (LLD) discovered by Shorr<sup>2</sup> to be essential for the growth of the *Lactobacillus lactis* Dorner, was also found by this observer to

parallel the degree of potency of various types of liver extracts employed in the treatment of patients with pernicious anemia. This led to the successful therapeutic trial of this substance, subsequently designated as vitamin B<sub>12</sub>, in patients with pernicious anemia.<sup>3</sup> It has been observed that when one gamma (1/65,000 gr.) of this material is given daily by intramuscular injection, the blood values are completely restored to normal within six to eight weeks, following an immediate preliminary reticulocyte rise of the standard type. In other words, here is a new substance, isolated from liver, which in almost unbelievably small amounts will produce all of the effects first observed following the ingestion of one-quarter to one-half pound of liver daily.

Further study by Rickes and his associates<sup>4</sup> has shown that it is a reddish-blue crystalline substance containing cobalt. Although definite proof is lacking, it is logical to assume for the present that this substance is probably the active antipernicious anemia principle of liver. Additional studies<sup>5</sup> have shown that it is effective in arresting the progress of the nervous system involvement, and that it controls the lesions of the mucous membranes in pernicious anemia.<sup>6</sup>

In other words B<sub>12</sub>, as far as preliminary observations go, is a complete treatment of pernicious anemia. In a patient who was sensitive to liver extract, the administration of B<sub>12</sub> was effective and could be given without producing untoward allergic manifestations.<sup>5</sup> One patient with a macrocytic anemia of pregnancy did not improve following its use.<sup>7</sup>

At the Simpson Memorial Institute we have treated 6 patients with pernicious anemia by means of this new preparation with satisfactory results. In 2 of these patients the dose was reduced to 0.45 gamma daily (1/130,000 gr.) and a definite although substandard effect was produced. This material has been isolated apparently in pure crystalline form. Its complete chemical nature and method of synthesis are as yet unreported. Furthermore, no publications have appeared concerning its efficacy by mouth. In my own opinion, however, it does not seem rash to predict that in the not too far distant future this material will be made synthetically and will be available commercially for oral use.

Recently Rickes and his associates<sup>8</sup> have demonstrated that the culture broths of *Streptomyces griseus* yield a red crystalline compound which is

potent in the treatment of pernicious anemia. Furthermore, all comparative tests indicate that this substance, obtained from a microbiological source, and vitamin B<sub>12</sub> are identical. It is possible that B<sub>12</sub>, therefore, may be produced in sufficient quantities by this method to make it feasible to employ it in the routine treatment of pernicious anemia and other macrocytic anemias which may be benefited by it.

#### HODGKIN'S DISEASE

THIS condition, which is usually assumed to be due to a malignant process, is best treated by the roentgen ray applied locally. After a considerable number of years of trial with this form of therapy, those with the largest experience believe that many of the patients will be restored for a variable but well worth while temporary period of good health, and in individual cases it undoubtedly prolongs life.

The problem in the treatment of Hodgkin's disease has always been that the patient invariably reaches a stage when roentgen ray therapy is no longer effective. At this time the patient's condition is usually characterized by emaciation, fever, and the development of a moderate to profound anemia. Recent experience has shown that nitrogen mustard therapy when then given will result in a remission. This is characterized by a subsidence of fever, a regression of the lymphadenopathy, hepatomegaly, splenomegaly, the cutaneous manifestations, and an amelioration in the patient's symptoms. In my experience, such periods of improvement persist from a month to a period of eight to ten months, and occasionally longer. It is not possible in any given patient, however, to predict with certainty the duration of such results.

Of greatest importance is the *possibility* that in some patients, at least, when they become refractory to the x-ray, nitrogen mustard therapy may resensitize them to further roentgen ray irradiation. Additional observations must be made, however, before a more exact statement concerning this can be formulated. Experimental studies suggest<sup>9</sup> also that consideration be given to the plan that the disease be first treated with nitrogen mustard therapy and when the patient becomes refractory to this agent, then roentgen irradiation may be employed. Any statement concerning the effectiveness of such a program of treatment must await further studies.

From our present experience it seems safe to conclude the following: (1) If nitrogen mustard therapy is withheld in patients with the disease who have become refractory to roentgen irradiation, then the physician is depriving such patients of a valuable therapeutic agent, even though the benefit derived from it is only transient. (2) It is of use in the occasional patient with Hodgkin's disease in whom intensive roentgen therapy must be directed to the mediastinum, and consequently fibrosis of the lungs may develop. This, of course, may be avoided by means of nitrogen mustard therapy. (3) The fact that chemotherapy of this type has even a transient salutary effect, reopens for consideration the entire field of the treatment of the malignant lymphomas. If such a chemical can be produced which has as much effect as the nitrogen mustards now in use, then the possibility is great that improved and more beneficial compounds of a similar nature may be synthesized.

The drug is given intravenously in distilled water in a dosage of 0.1 mg. per kilogram of body weight. This dose is injected every other day for four days but in no instance is the total dosage for the four injections permitted to exceed 24 mg. The original preparations caused considerable nausea and vomiting but the new nitrogen mustard derivative, S-K 136, although it may cause anorexia for twelve to eighteen hours, does not result in other gastrointestinal disturbances. It is, however, similar to other preparations in that it is prone to cause venous thromboses at the site of the venipuncture. This can be averted by injecting the material into the rubber tubing leading to the vein from the intravenous apparatus.

The nitrogen mustards find their greatest usefulness in the treatment of Hodgkin's disease. They have been employed therapeutically with some success in chronic lymphatic and myelogenous leukemia, in polycythemia vera, and in lymphosarcoma. The results attained are not as satisfactory, however, as those produced by irradiation. This form of therapy is of no value in the treatment of the acute leukemias.

#### TREATMENT OF LEUKEMIA

It is generally agreed that roentgen irradiation is the treatment of choice in all types of leukemia. It is of value, however, in the treatment of the chronic types only, as it is not effective and, in fact, it may be harmful in the acute varieties. Roentgen

irradiation is the preferred therapeutic agent in the leukemias because it is readily available, the dosage is more accurately controlled, and extended experience over the past few decades makes it possible to predict the results with greater certainty.

In the past, in my opinion, there has been a tendency to make two errors when roentgen irradiation is employed in the treatment of the disease. They are: (1) The relapse is permitted to proceed too far before treatment is administered, and (2) excessive irradiation may be given which may not only depress the abnormal formation of the white blood cells but also do injury to the red blood cell forming elements. It is probably not wise to permit the white blood cell count to rise above 40,000 per cubic millimeter without applying treatment, and it should be given before this level is reached, if symptoms appear. There is general agreement that the "spray" or total body irradiation is superior in the treatment of patients with myelogenous leukemia, and the local treatment is more satisfactory in the patients with lymphatic leukemia.

#### RADIOACTIVE PHOSPHORUS

**R**ADIOACTIVE phosphorus ( $P_{32}$ ) has been employed in the treatment of chronic leukemia and is especially effective in patients with the myelogenous type. It is, in effect, another method of administering total body irradiation. While it can be given orally, it is probably more effective when injected intravenously as this assures complete absorption. When this form of therapy is used, the radioactive material is carried to the bones where the abnormal marrow is subjected to irradiation for a period of several months. The dose of radioactive phosphorus ( $P_{32}$ ), which has a half-life of 14.3 days, is 4 to 6 millicuries. It may be repeated, if necessary, in the same dosage, but not before a period of four months has elapsed.

The results produced are similar to those following the x-ray treatments. There is no special advantage to radioactive phosphorus, however, except that the material is easily given and there is a complete absence of radiation sickness. On the other hand, it does require certain apparatus and experienced workers to handle it. Unless an efficient and practical method of dispensing the material is devised and put into effect, it will not be possible to treat a large number of patients with leukemia by this method. It should be empha-

sized, however, that the physician is *not* depriving his patient with leukemia of a form of therapy which is distinctly more efficacious than the roentgen irradiation, if radioactive phosphorus is not administered.

#### URETHANE IN THE TREATMENT OF LEUKEMIA

Urethane (ethyl carbamate) was introduced in the treatment of chronic leukemia by Paterson and her associates<sup>9</sup> in 1946. From the preliminary studies, it was concluded that this drug produced an effect comparable to the x-ray. Although the exact mode of action is not clearly understood, it is believed that the effect is produced by inhibiting the rate of mitotic cell division of the leukemia cells.

Our experience in treating a group of patients with chronic leukemia, especially the myelogenous variety, has been gratifying. Our plan of therapy has been as follows: 0.32 gm. (5 gr.) of urethane in enteric-coated tablets has been used. The first day of treatment this dose is given three times. On successive days the dose is increased to a total of 4, 5, 6, 7, 8, and 9 such tablets daily, or a maximum total dosage of 3.0 gm. (45 gr.) a day, provided the patient can tolerate this amount. If this dose can be taken, it should be continued until the white blood cell count is within normal limits. In some patients, however, the development of gastrointestinal symptoms prevents the ingestion of the maximum dosage and hence it becomes necessary to employ the maximum dosage tolerated which does not produce nausea and vomiting. In some instances the patient tolerates the medication better if it is given during or after meals.

It has been our custom to continue with a dose of 1.0 gm. indefinitely unless the white blood cell count falls to an extremely low level. In general, it may be said that with this medication it requires between fifteen and ninety days, with an average of about twenty-one days, for the white blood cell count to return to normal. The leukocyte count should be determined every two to three weeks in order to control the treatment.

It is not possible from our present experience to draw a final conclusion concerning the value of urethane in the treatment of leukemia. The results appear to be more satisfactory in myelogenous leukemia than in other varieties. It is a simple therapeutic measure which can be easily employed, but *it does require that the patient continue under observation and the leukocyte count be determined*

*at intervals.* In a majority of our patients with chronic myelogenous leukemia, gratifying results were attained. With our present experience, it is not possible to state the average duration of the remission induced by the therapy. In one of our patients it has persisted for over one year. The treatment does not appear to be of benefit in patients with acute leukemia, although in some instances the total white blood cell count is reduced.

#### FOLIC ACID ANTAGONISTS

Recently several compounds, closely related chemically to folic acid, have been developed which have the property of inhibiting its growth-promoting activities toward certain bacteria by interference with enzyme systems. These substances, on account of this peculiar characteristic, are called "folic acid antagonists" or "inhibitors." The use of this unique property of the antagonists in the treatment of patients with leukemia was first employed by Farber and his associates in 1948.<sup>10</sup> Following this report Bethell and his coworkers<sup>11</sup> treated a group of patients with leukemia and related disorders with aminopterin, which is a folic acid inhibitor.

It has been clearly established that in patients with myelogenous leukemia, aminopterin will usually cause a striking decrease in the granulocyte count of the peripheral blood and inhibit the myeloid activity in the bone marrow. With this there is often a notable decrease in the size of the spleen, and amelioration of the symptoms. When the antagonists are omitted in such patients, there is a rapid recurrence of the leukemic process with the associated symptoms. In one patient, Bethell and his associates<sup>11</sup> were able to reverse the action of the antagonist by the administration of large doses of folic acid.

THE observations of the action of folic acid antagonists in patients with leukemia may be summarized by the following statement. In patients with acute leukemia there appears to be a "wiping out" of the marrow components with the main effect on the immature cells of the granulocyte series. The change appears to be one which tends to convert the condition to an aplastic anemia. The effect of the antagonists is not entirely beneficial, as some patients develop an alopecia, ulcerative lesions in the mouth, and prolonged use

causes a depression in the formation of the erythrocytes. The possibility that some of these changes may be the result of the action of the antagonists on the other components of the vitamin B complex should be taken into consideration.

At present, it is recognized that aminopterin definitely does not alter the course of patients with leukemia although promising results have been reported in children with the acute form of the disease. With the likely possibility that newer compounds may be produced, it is reasonable to assume that in the future more potent compounds with less harmful untoward effects may be developed which will be much more effective agents in the treatment of the disease.

#### PARA-AMINOBENZOIC ACID IN THE TREATMENT OF LEUKEMIA

It is of interest to note the studies of Zарафонетис and his associates<sup>12</sup> which show that para-aminobenzoic acid will consistently reduce the white blood cell count in patients with chronic myelogenous leukemia. When this preparation was administered orally in the form of 2 gm. of sodium para-aminobenzoate every two hours there was a striking reduction in the total white blood cell count which was usually first apparent during the third week of therapy. With the discontinuance of the medication, there was a rapid rise in the leukocyte count which was again reduced by the resumption of therapy. Despite the remarkable reduction of the total white blood cell count, there was no uniform or substantial clinical improvement in the condition of the patient or diminution of the symptoms.

The mechanism whereby para-aminobenzoic acid causes this reduction in white blood cell count is not clear at present. It is apparent, however, that the effect is merely one in which the factors responsible for this persistent elevation are merely inhibited. This is indicated by the prompt rise which occurs when the therapy is omitted.

The action of this substance in patients with myelogenous leukemia is of no practical value at present in the management of the disease. It is of importance, however, because continued studies may disclose new and significant information which will have a bearing on the disordered metabolism of leukemic cells and possibly other cells of a neoplastic nature.

#### POLYCYTHEMIA

The most commonly accepted current view concerning the etiology of polycythemia vera is that it is due to an excessive production of red blood cells attributable to an overactive bone marrow. The exact cause of the abnormality in bone marrow function is a debatable one but my own personal belief is that the condition is closely allied to leukemia and is, therefore, of a neoplastic nature.

THERE are three useful therapeutic procedures which may be employed in the treatment of patients with this disorder. They are: (1) phlebotomy, (2) total body irradiation, and (3) use of radioactive phosphorus.

Phlebotomy with the removal of 300 to 500 cc. every third day is useful in the treatment of patients who are suffering from the acute symptoms of the disease. It is often necessary that a total amount of 1,500 cc. or more be taken in order to reduce the hematocrit reading to 50 per cent, which is the desirable level to which it should be reduced.

In recent years it has been demonstrated that the roentgen treatment with total body irradiation is probably the most convenient as well as a highly effective method of therapeutic management of the disease. An average dose of 20 roentgens is given by the "spray" technic every other day until the white blood cell count is 4,000 per cubic millimeter. This usually requires a total dosage of between 100 and several hundred roentgens. In a great majority of patients, a remission is produced by this form of therapy which persists for periods of six months to several years.

Radioactive elements ( $P_{32}$ ) may be employed in the treatment of polycythemia vera with satisfactory but not superior results to those attained by roentgen irradiation. This form of treatment is merely another method of giving total body irradiation. This radioactive material has a half-life of 14.3 days. It may be given orally or preferably intravenously, and since it concentrates in the bone marrow, it can subject this tissue to irradiation for a prolonged period of time.

We have found it safest to begin with a dose of 4 to 6 millicuries and not to repeat it for a period of about four months. While the effect of this agent on the white blood cells is an immediate one, that is within a few days, it requires from two to three months to produce an appreciable reduction in the hemoglobin and red blood cell count. It is

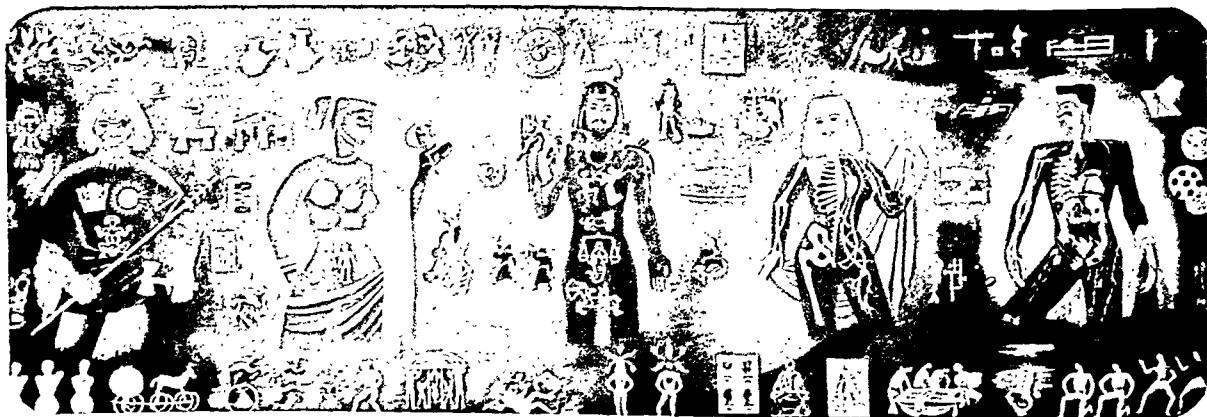
advisable, therefore, when treating with either "spray" roentgen ray or with radioactive phosphorus to first use phlebotomy for the relief of the immediate symptoms.

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## AUREOMYCIN FOR TYPHUS

AUREOMYCIN therapy has produced good results in a case of recurrent epidemic typhus, according to a report by Dr. Emanuel B. Schoenbach, Johns Hopkins University School of Medicine. Administration of the antibiotic was started on the sixth day of illness, when the patient's temperature was 103.6° F. Quick improvement resulted. Headache was diminished in twelve hours, fever was abated in twenty-four hours, and rash had almost disappeared in forty-eight hours. Six days after the aureomycin treatment was begun, the patient was discharged from the hospital with no symptoms of the disease. In contrast, among 18 patients observed during the past ten years, fever was abated on the tenth to the sixteenth day of illness.



## THE PROGRESS OF MEDICINE

Mural depicting the five main ages of man (Primitive, Greek, Dark Ages, Renaissance, and Modern) and his progress in the treatment of disease from primitive magic to the approach of modern science. This seven-foot panel will be shown at several medical conventions during the coming months by Burroughs Wellcome & Co.

## Diagnosis and Treatment of Gallbladder Disease

WARREN H. COLE\*

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GALLBLADDER disease is a large subject and there are many varied aspects which are available for discussion. I will try to pick out some of the things which I believe are important and of particular interest to you.

First, I want to call your attention to the extreme frequency of gallbladder disease. One of the best records which shows this frequency is a large series of autopsies, about 17,000 cases, reported by Robertson and Dochet of the Mayo Clinic. In this report they noted that 32 per cent of the women past the age of 40 had stones. Of course, there are a lot more who had gallbladder disease without stones, but I would like to point out that I am sure that of this 32 per cent, much less than one-third had symptoms which you could identify specifically as being of gallbladder origin.

The disease is much less common in men; in fact, Robertson and Dochet found when they combined men and women in their series, they had only 22 per cent incidence of stones in patients past the age of 40.

The symptoms and manifestations are well known, and I will not go over them except to emphasize one or two points. First, the pain is a very important phase of the diagnosis. The dyspepsia so commonly seen in gallbladder disease is likewise commonly seen in dozens of other diseases of the organs in the peritoneal cavity, and we cannot use that as a very significant indication of the presence of gallbladder disease.

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Presented November 11, 1948, before the meeting of the Interstate Postgraduate Medical Association of North America, Cleveland, Ohio.

If you operate on patients with stones or gallbladder disease in the absence of pain, you can expect a large percentage of failures in your post-operative results. As a matter of fact, if you have no pain typical of a gallbladder right upper quadrant pain, your incidence of good results will be no more than 60 per cent; if you have rather typical attacks of pain in the right upper quadrant radiating posteriorly and stones present in the gallbladder, you can depend upon 95 per cent good results in that series.

### DIFFERENTIAL DIAGNOSIS

In one case, the patient had rather typical upper quadrant pain. She was sent into the hospital without a cholecystogram. While in the hospital, a cholecystogram was done, and to everybody's surprise there was a highly concentrating gallbladder. Of course, that aroused everyone's suspicion that the diagnosis was in error. The radiologist, being astute, saw something wrong in the vertebral column and took a better film; he found that one vertebra was necrotic. The diagnosis was rather obvious—tuberculosis of the spine.

This is only one of about a dozen or more diseases which can mimic exactly gallbladder disease; there are not very many diseases where errors are made more frequently than in gallbladder disease. This is particularly true because gallstones and cholecystitis are so common that the clinician is apt to say, "Well, I find some stones so we must operate and get rid of these symptoms of dyspepsia," but perhaps the patient had an arthritis of the spine or a carcinoma of the colon or some other



WARREN H. COLE

disease, which, of course, is not relieved by cholecystectomy; obviously, performance of cholecystectomy under such circumstances would be a very serious error.

TABLE I  
INDICATIONS FOR OPERATION IN GALLBLADDER DISEASE

- |  |
|--|
| 1. Cholecystitis or cholelithiasis with symptoms   |
| 2. Cholelithiasis without symptoms:<br>If under 45 or 50 years of age  |
| 3. Secondary disease in other organs:<br>Hepatitis<br>Pancreatitis<br>Duodenal adhesions producing obstruction, etc. |
| 4. Obstruction of cystic or common duct  |
| 5. Tumor   |
| 6. Trauma  |
| 7. Miscellaneous causes:<br>Fistula<br>Stricture<br>Congenital atresia   |

## INDICATIONS FOR OPERATION

What are our indications for operation in gallbladder disease? In the first place, we must have cholecystitis or stones with symptoms; at least that

is one indication (Table 1). If you have stones without symptoms and the patient is under 45 or 50 years of age, you are entirely justified, in my opinion, in advising operation, because if that patient carries stones throughout life expectancy, meaning another twenty years, the danger of some complication is very significant. And remember, it is the complication of gallbladder disease which is the lethal factor and not gallbladder disease itself.

If secondary disease in other organs is present, such as hepatitis, pancreatitis, adhesions around the duodenum producing obstruction, again we have a strong indication for surgical treatment, even though the patient is considerably past the age of 45 or 50. Also if the cystic duct becomes obstructed by stone or by inflammatory adhesions or if the stone drops in the common duct, again you have very strong indications for operation and you can justifiably insist upon surgical relief in those patients.

**T**UMOR is an indication if you can make the diagnosis. How often can we make a preoperative diagnosis correctly of tumor in a gallbladder? Occasionally you do see papillomas showing up as defects. Very seldom indeed can you make a diagnosis of carcinoma of the gallbladder, because the function of the gallbladder becomes destroyed early in the disease, and perhaps it was already destroyed because stones are usually present in carcinoma of the gallbladder. Accordingly the gallbladder will not concentrate the dye and the tumor cannot be demonstrated as a filling defect, as is the case with stones.

Trauma, of course, is a justifiable indication. In addition, there are miscellaneous causes such as fistulas, strictures, atresia, and so forth.

In Figure 1 are shown two gallbladders which illustrate two points: They were removed within a few days of each other, one being about the largest I had ever seen, the other the smallest. There was a little thickening of the dome in the large gallbladder; that is all there was abnormal in that gallbladder. The patient's symptoms were typical of gallbladder disease with stones. She returned six months later with a mass in the right upper quadrant; was operated a second time and a carcinoma was found. Originally the surgical pathologist's section came back as cholecystitis, but when we looked again we found a few cells which were rather obviously carcinoma, and after cutting



Figure 1. The gallbladder in the upper part of the illustration was unusually large. It was removed from a patient with rather typical gallbladder colic. The thickened area in the dome is an early carcinoma. In spite of the fact that this tumor was presumably very early, metastases developed and the patient died about one year later. The gallbladder in the lower part of the illustration was unusually small and removed from a girl 16 years of age.

more sections we found a definite, small, early carcinoma. This patient, however, went on downhill, in spite of the fact that we removed this nodular mass from the edge of the liver, and she died a year later.

The small gallbladder was removed from a young lady 16 years old. She had several attacks of appendicitis of a mild type, and appendectomy was done between attacks, and this was found. This gallbladder was removed, and I say very justifiably, although there were no symptoms referable to gallbladder disease.

#### CASE PRESENTATIONS

I wish to present two patients who will bring

out several points of considerable importance. The first one is a lady 52 years old. She has attacks of pain and colic in the right upper quadrant. Past history: usual diseases of childhood. In 1925 she had a cervical polyp removed which proved to be malignant. This was followed by hysterectomy. There have been no indications of recurrence since. The menstrual history began in 1919. She is the mother of 4 children. She has, of course, surgical menopause. There is nothing of importance in her family history. In January of 1948 the patient had the first of several attacks of pain in the right upper quadrant. They were brought on by the ingestion of pork, and consisted of rather sudden, severe pain in the right upper quadrant referred to the right shoulder. The attacks were quite severe

and the patient assumed the position of leaning over the back of a straight chair in an attempt to relieve the pain. Following the attack there was no jaundice and the stools were cholic. X-ray examination was made between attacks and a functioning gallbladder was found, with several large stones. These four shadows inside the gallbladder, which has fair concentration, show up very decisively and the diagnosis of cholelithiasis cannot be in error.

What is the cause of her pain? In the first place, it is not a diseased gallbladder in the ordinary sense of the word. If you looked at the gallbladder grossly it would appear practically normal. The wall would be thin and you would have no inflammatory disease. If one of these large stones were to drop down into the ampulla of the gallbladder, that is near the cystic duct, it might obstruct the cystic duct, and you would then have pain produced by obstruction. We are convinced that obstruction of the cystic duct is one of the major factors in the production of pain, but of course not the only one.

I would not expect anything in her common duct, for two reasons: she has had no history of jaundice, and these stones are large—too large to go down through the cystic duct.

WHAT should we tell this patient? Assuming that all of her other data are negative, the blood pressure, urine, and so on, we would recommend operation for two reasons: first, she has had several mild attacks of pain; second, she has stones. It is true that she might say these attacks of pain are not so severe but that she can tolerate them, and nobody can predict just when she will have another attack.

We would say also that you might have some slight danger of development of carcinoma in a patient carrying stones around for twenty, twenty-five, or thirty years. We do not know when those stones developed, but if she lives her normal life expectancy she has approximately seventeen more years. If you will go over the series of reports in the literature you will find that now there is agreement that there is carcinoma in about 4 per cent of proved cases of stones, at least as found at autopsy. So 1 out of 20 patients with stones at autopsy also has carcinoma of the gallbladder. When you apply those figures you begin to get a little worried, because carcinoma of the gallbladder is a vicious

tumor for which there is no satisfactory treatment, at least with expectation of cure.

Now that we know that the mortality rate following cholecystectomy in a simple case like this is under 1 per cent, we are really, then, weighing 1 per cent versus 4 per cent, and the scale tips rather heavily toward the side of cholecystectomy, assuming, of course, that the patient has several more years to live. If, however, she were 65 years old, had a blood pressure of 200, and a lot of albumin in the urine, I would say let this patient alone and take the risk of carcinoma or obstruction of the common duct, because we do not want to run the risk of fatality following an operation in the presence of hypertension. Obviously a patient with hypertension and severe kidney damage is endangered a great deal by cholecystectomy. The mortality rate would be as high as 10 per cent, perhaps higher, in that group. Your mortality rate from operation would be greater than the incidence of carcinoma or any of the complications of gallbladder disease.

This patient is not very anxious to have an operation. What danger is there if she delays or refuses? I have already discussed some of the dangers. There is not a great deal of danger of her getting a hydrops and empyema at the present time, although one of those large stones could drop down and obstruct. So that all we can say is that we advise operation; we rather insist that she have it, but we cannot tell her it is absolutely essential, as we can perhaps in the next patient.

This next patient is 46 years of age and was admitted to the hospital on October 27, 1948, with a history of severe right upper quadrant pain which was sudden in onset following the eating of chicken ten days prior to admission. This was accompanied by marked nausea, anorexia, and vomiting. The pain was colicky in nature, did not radiate, but continued for one week, with nausea and vomiting.

DR. COLE: Tell us how bad that pain was.

PATIENT: It was very bad.

DR. COLE: Did you have to have some medicine for it?

PATIENT: I had to have the doctor. He made an injection.

DR. COLE: Did that relieve you?

PATIENT: Oh, yes. Then he gave me a brown tablet to use, and the pain went then.

DR. COLE: But if you had not had the medicine would the pain have been unbearable?

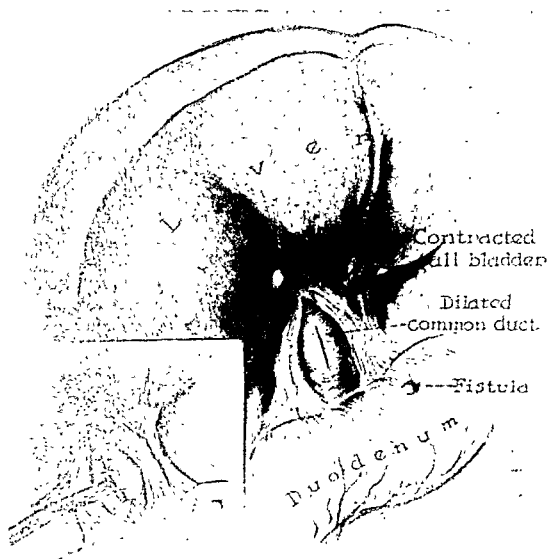


Figure 2. Patient had jaundice of varying intensity for a period of three years. A stone was found in the common duct. (From Cole in *Illinois M. J.*).

PATIENT: It was an awful pain, awful pain! I was vomiting all the time, too, because of pain.

DR. COLE: Thank you very much. She had a rather typical attack of gallbladder disease of a severe character, which gives still more assurance that the trouble is arising from the gallbladder.

This patient noted chalky stools; in reality we should say light tan, of about one week's duration. The urine was dark in color during that time. She did not think she had any fever.

During the few days prior to admission she has had severe pruritus, and that has troubled her a great deal. But she did not notice jaundice, although she said her eyes were slightly icteric, that is, they were a little bit yellow. There is no history of hematemesis or melena. There is a history of marked aversion to fatty food.

The patient thinks she had a similar attack last year and one seven years prior to admission.

The physical examination is negative except for a slight icteric tinge to the sclera. The laboratory examination shows 8,000 white cells; the differen-

tial is normal; there is an icterus index of 12; urine is negative. An icterus index of 12 is on the borderline and certainly is not indicative of gross jaundice; you have to call that latent jaundice.

The x-rays reveal no shadow, which is just as conclusive from the standpoint of diagnosis as if we saw stones, because when the cholecystogram shows no shadow you have 100 per cent assurance that there is gallbladder disease, particularly if you can prove that the patient got the dye and did not vomit it, and if she had a double dose, which this patient had.

The next day, after one visualization attempt, she had a double dose of dye, and this likewise showed nonvisualization, so we know with no chance of error that this patient has a diseased gallbladder; in fact, it is diseased so much that it is thrown out of function.

What would be the advice here? In the first place, her examination now reveals only slight tenderness in the right upper quadrant, although when she had her attack she complained that the

pain was present in the epigastrium and, in fact, slightly to the left.

Is this pain solely of gallbladder origin? That is a hard question to answer. In reality I think that in many of these patients the pain is also of pancreatic origin. In other words, there is a pancreatitis very commonly associated with gallbladder disease, particularly when stones are present.

I would predict that about 75 per cent of patients with pancreatitis also have gallbladder disease, and those figures represent justification for advising surgical treatment of gallbladder disease when you have a pancreatitis, even though you may have no symptoms of cholecystitis. Keep that point in mind. If you have pancreatitis and a diseased gallbladder, I think, barring exceptional cases, you have perfect justification for removing the gallbladder, because pancreatitis is a severe disease which has devastating effects; it tends to be recurrent, and it is a distinct threat to life.

This patient may have complication of slight degree which would be added reason for advising operation. Of more importance than that is the fact that she has had slight icterus with severe itching.

We might ask, could this mild jaundice be associated with hepatitis? We know that hepatitis is a very common accompaniment of gallbladder disease. But my answer to that in this case is no. I do not think that hepatitis is the cause of her jaundice, because she had no fever or evidence of acute inflammation accompanying her attack. If she had had fever of 103° F. with a lot of tenderness and muscle spasm and other evidences of chemical or bacterial inflammation, I would then say that she might have had enough hepatitis to produce slight jaundice.

**W**HAT is our advice to this patient? It is very strongly in favor of surgical treatment. In the first place, I am quite convinced that she has or had a stone in her common duct. We do know that small stones can get into the common duct or can arise there and be passed through the sphincter of Oddi. Most of them are not passed. They may lodge in the sphincter for a few days and then drop back, as I would conclude happened in this case—a stone lodged against the sphincter producing probably a partial obstruction, and now it has dropped back out of position so that she has no symptoms and no evidence of jaundice.

I would likewise say that she should have her

common duct opened, even though you cannot feel a stone. There might be an exception to that. For example, if you looked at this common duct and saw a duct of normal size and with normal wall without thickening, I would say perhaps that the stone had passed on out. I cannot give you at this time a definite statement as to what I would do if that picture presented. I would want to see that patient and would want to be there and go over those data myself, but I have on one or two occasions failed to open the common duct, and as far as I know I have never regretted that, even though there was a history of jaundice.

Commonly, when you have a history of jaundice it will be due to other things, at least possibly due to other diseases. The most common explanation of jaundice is not obstruction of the common duct by stone, but virus hepatitis. If the patient presents herself with a mild pain in the right upper quadrant, a history of having had jaundice of two or three weeks' duration, perhaps six months previously, and had no pain at that time, the diagnosis is in reality a virus hepatitis and not obstruction of the common duct by stone. Operation in that case might be a serious error, even though that gallbladder revealed no shadow. The whole difficulty may have been caused by a virus hepatitis and not primarily by the gallbladder.

Still another patient illustrates a very important point (Figure 2): She had jaundice for three years off and on. At first we thought she had a carcinoma of the pancreas, but the fact that she had slight alternation of her jaundice with cholic stools now and then made us suspect that that diagnosis was wrong and we thought she deserved a laparotomy. At laparotomy we found the duodenum plastered against the gallbladder. There was a fistula between these two organs. Obviously some stones had eroded through into the duodenum. The gallbladder was nothing but a fibrosed nubbin. We found a large stone in the common duct. We opened the duct, took out the stone, put in a T-tube, and she got well. What a tragedy it would have been if we had sent her home with a diagnosis of inoperable carcinoma.

Sometimes you cannot get those stones out through the opening in the common duct, but must open the duodenum and perhaps dilate the sphincter and remove the stones manually, closing the duodenum in a transverse fashion.

I have already referred to the indications for opening the common duct. Of course they are very

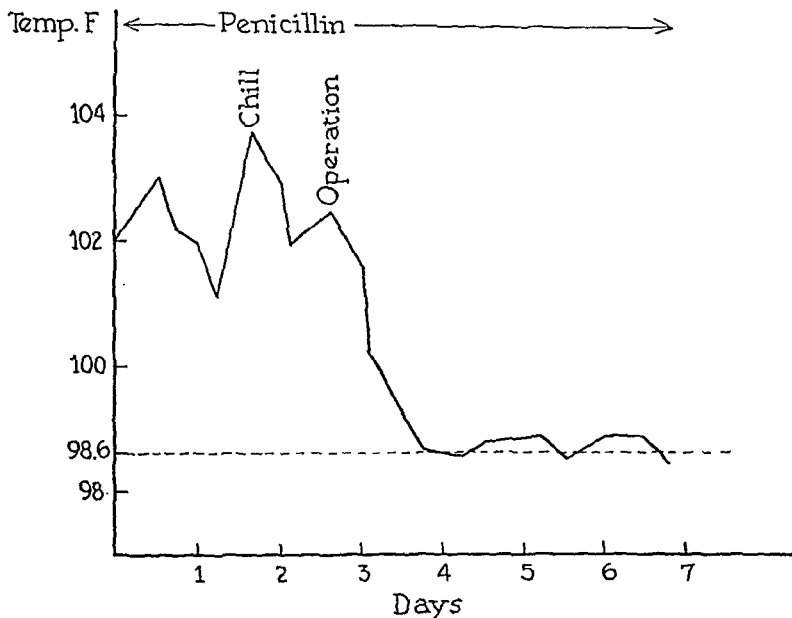


Figure 3. Temperature reaction in a patient with suppurative cholangitis. Penicillin was ineffective in relieving the chills and fever but drainage of the common duct resulted in almost immediate subsidence.

TABLE 2  
INDICATIONS FOR OPENING COMMON DUCT

1. Palpable stone or tumor in duct
2. Dilated duct
3. Thick wall
4. Jaundice at time of operation  
(History of jaundice not sufficient indication unless virus hepatitis can be excluded)

important, if you have a palpable stone or if you have a dilated duct or thickened wall, or jaundice at the time of operation (Table 2). A history of jaundice previously is not sufficient, particularly if you do not have pain with the jaundice.

The other patient with a stone in the common duct, as illustrated in Figure 2, did not have much pain; she was one of the exceptions. About 20 per cent of patients with obstruction by stone will not have pain except perhaps during the first day or two. Most of them will have slight pain at the onset. After that the pain disappears and they really have painless jaundice, and that can mislead you.

#### SUPPURATIVE CHOLANGITIS

A complication which is of great importance, because you must use your judgment in treatment, is suppurative cholangitis. A patient had jaundice of about a week's duration, a fever of 102°F., and chills. I am now convinced that chemotherapy is of no value in suppurative cholangitis. However, streptomycin in one case really cured a situation which persisted after we had drained the common duct, and in that case I think she probably had small abscesses in the liver.

Figure 3 shows an unusually good response to drainage. The temperature, as you see, dropped precipitously to normal after the common duct was opened and drained. We do not expect quite as good a result in every case. We expect it to take a couple of days for the temperature to drop, but indeed the results of drainage of the common duct in suppurative cholangitis are remarkably good, and I am strongly in favor of drainage, although I know some physicians think they can treat it medically.

## SCIENTIFIC EXHIBIT

# The Therapeutic Uses of Penicillin Aerosol

## The Application of Nebulized Penicillin and Other Aerosols in Broncho-Pulmonary Disease

ALVAN L. BARACH, BETTINA B. GARTHWAITE AND HYLAN A. BICKERMAN

COLUMBIA UNIVERSITY—PRESBYTERIAN MEDICAL CENTER, NEW YORK CITY

### BIOLOGIC RATIONALE FOR PENICILLIN AND OTHER ANTIBIOTIC AEROSOLS

1. High local concentrations on the bronchopulmonary surface as demonstrated by the high sputum levels of the drug employed.
2. Simultaneous provision of effective blood levels.
3. Elimination of infection caused by relatively resistant organisms as in bronchiectasis, pneumonitis and lung abscess.
4. Provision of high local concentrations in the mucous membranes, such as those of the nasal accessory sinuses not accomplished by systemic penicillin.
5. Effectiveness and feasibility for long continued administration as in bronchiectasis.

### DISEASES IN WHICH NEBULIZED PENICILLIN MAY HAVE THERAPEUTIC VALUE BEYOND THAT ACCOMPLISHED BY SYSTEMIC ADMINISTRATION

- |                                  |  |
|----------------------------------|--|
| 1. Sinusitis, acute and chronic. | 3. Lung abscess.   |
| 2. Bronchiectasis.               | 4. Pneumonitis and bronchitis due to highly resistant organisms. |

## CLINICAL RESULTS WITH PENICILLIN AEROSOL IN BRONCHOPULMONARY AND SINUS DISEASE

<i>Diagnosis</i>	<i>No. Cases</i>	<i>Improvement Due to Penicillin Aerosol</i>		
		<i>Marked</i>	<i>Moderate</i>	<i>Slight or None</i>
Bronchiectasis	41			
Bilateral, advanced	34	9	13	12
Preoperative	3	2	1	0
Minimal	4	3	1	0
Lung Abscess, acute	5	3	0	2
Lung Abscess, chronic	3	1	0	2
Bronchitis, chronic	25	14	7	4
Sinusitis, acute	15	8	3	4
Sinusitis, chronic	105	29	40	36
Bronchial Asthma	91	16	19	56
Pulmonary Emphysema	86	20	19	47

## METHOD OF TREATMENT

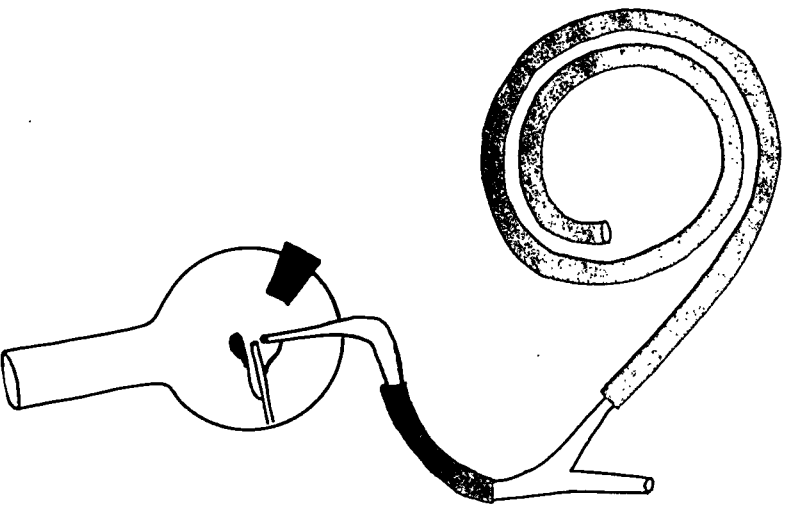
## Bronchopulmonary Infections, Acute and Chronic Sinusitis

## MOUTH INHALATION

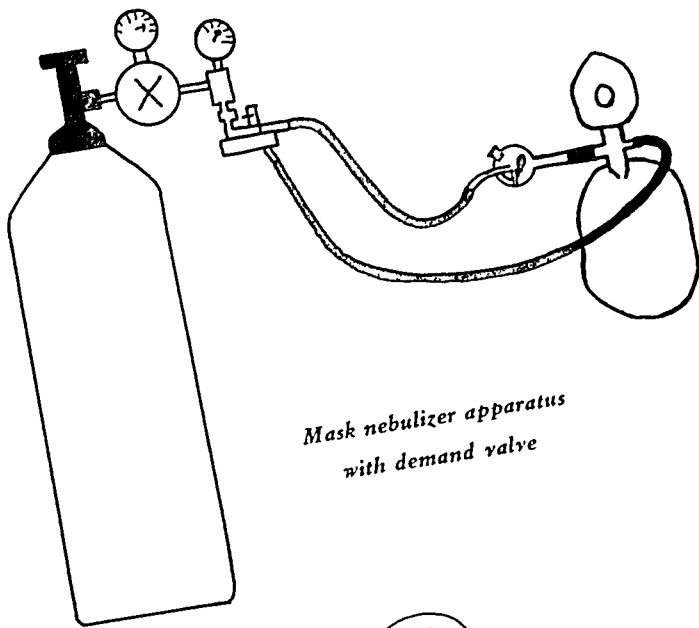
The open end of the Y tube is closed by a finger during inspiration and opened during expiration so that penicillin is nebulized during the inspiratory cycle only, generally at a flow of 6 to 10 liters of oxygen per minute. Spraying the throat with water from an atomizer before and during the inhalation may prevent throat irritation. Rinsing the mouth with water during treatment may prevent reddening or blackening of the tongue.

The demand valve results automatically in a delivery of oxygen and, therefore, nebulizes penicillin during inspiration by a slight lowering of negative pressure within the mask; generally employed with a flow of 10 liters of oxygen per minute.

Dosage usually recommended is 50,000 to 100,000 units followed by 0.5 cc. rinse, four to five times daily.

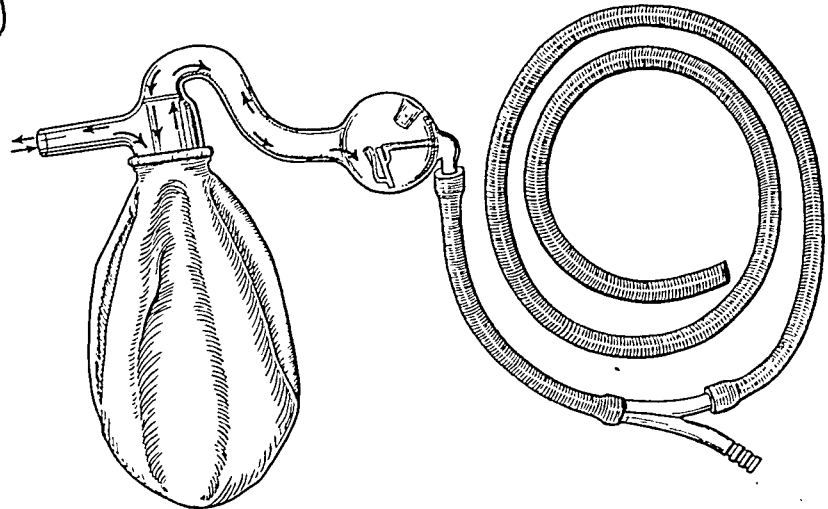


*Nebulizer with Y-tube*



*Mask nebulizer apparatus  
with demand valve*

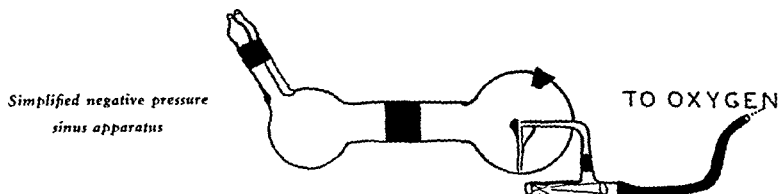
*Nebulizer with  
rebreathing bag*



# NASAL INHALATION IN CONJUNCTION WITH INTERMITTENT NEGATIVE PRESSURE

The open end of the venturi is closed by a finger so that penicillin is nebulized for four breaths. The finger is then released and the patient swallows, creating a negative pressure of approximately 60 mm. Hg. in the nasal passages and antra, with an oxygen flow of 6 liters per minute with the glass venturi and 10 liters per minute with the metal venturi tube. The procedure is repeated until the penicillin solution is completely nebulized.

Dosage usually recommended is 50,000 units in 1 cc. normal saline, followed by 0.5 cc. rinse, four times daily.



## EXPERIMENTAL STUDIES

BLOOD LEVELS AFTER 50,000 UNITS PENICILLIN AEROSOL				
Method of Administration	No. Tests	Blood Levels (Units/cc.)		
		½ hr.	1 hr.	2 hrs.
Cold, dry aerosol, calcium penicillin	91	0.10	0.08	0.04
Warm, humidified aerosol, calcium penicillin	37	0.11	0.11	0.06
Cold, dry aerosol, crystalline sodium	81	0.16	0.11	0.06
Warm, humidified aerosol, crystalline sodium	14	0.18	0.16	0.10

SPUTUM PENICILLIN LEVELS				
Method	No. Tests	24-Hour Dosage (Units)	Sputum Volume (cc.)	Sputum Penicillin Level (Units/cc.)
Aerosol	15	200,000-400,000	2-100	3-250
Intramuscular	27	240,000-800,000	24-285	0

PENICILLIN AEROSOL—MASK NEBULIZER TECHNIC

No. Tests	Dosage (24 hrs.)	Sputum Vol. (cc.)	Sputum Penicillin Level (U/cc.)	Urine Penicillin Level (U/cc.)
2*	200,000	830	0.5	4
1	300,000	150	32	8
2*	400,000	50	15	7.5
2*	500,000	397	245	20
1	500,000	290	10	32

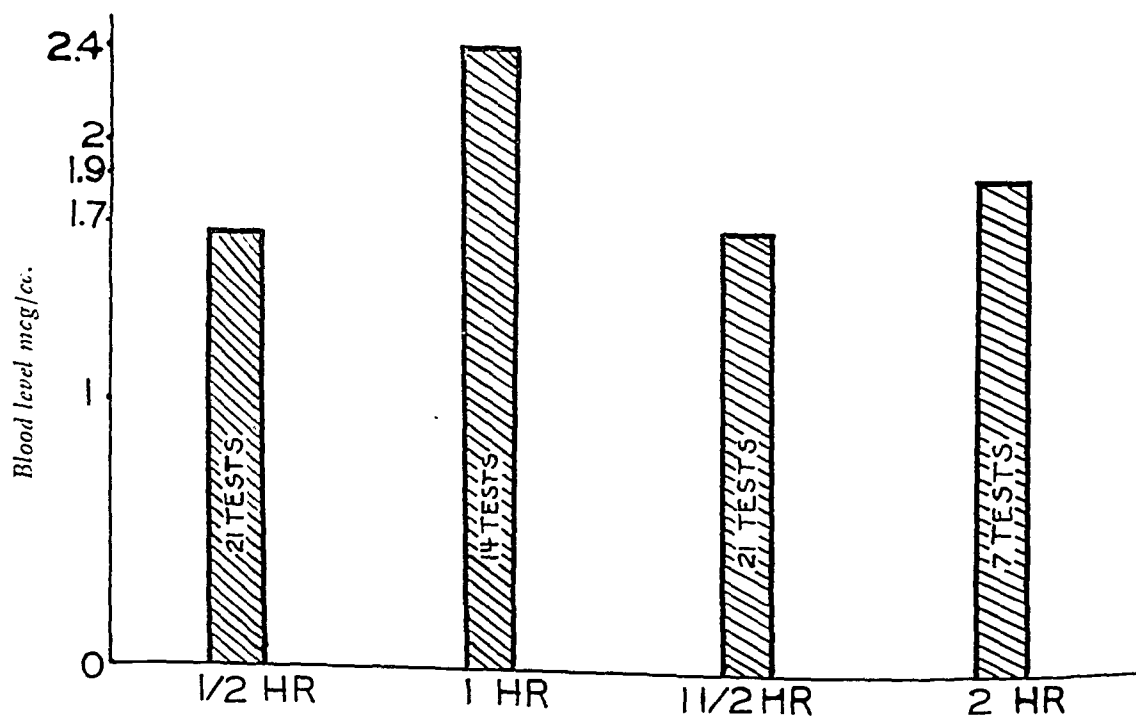
MASK NEBULIZER TECHNIC WITH DEMAND VALVE

1	150,000	192	20	0.4
1	300,000	160	40	4
2*	400,000	50	32	5
1	500,000	144	80	32

\*Two tests on same patient

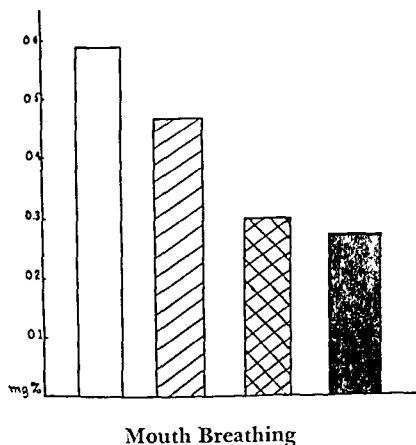
STREPTOMYCIN AEROSOL  
MOUTH INHALATION APPARATUS

0.4 gm. in 2 cc. distilled water, with 1 cc. rinse



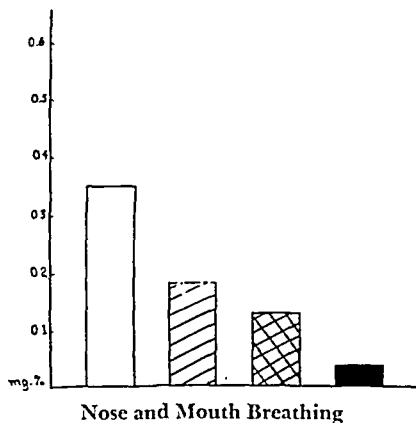
Sputum level in 8 cases collected for three hours varied between 20-1200 mcg/cc.

	<i>No. Tests</i>	<i>Dosage (24 hrs.)</i>	<i>Sputum Volume (24 hrs.)</i>	<i>Sputum Level (24 hrs.)</i>	<i>Urine Level (24 hrs.)</i>	<i>Blood Levels</i>
Streptomycin aerosol with mask nebulizer technic	12	2 gm.	14-1050 cc.	0-450 mcg/cc.	0-200 mcg/cc.	4 tests: ½ hr.—3.9 mcg/cc. 2 hrs.—5 mcg/cc.
	2	4 gm.	37-63 cc.	30-66 mcg/cc.	60-166 mcg/cc.	1 test: 1 hr.—7.5 mcg/cc.
Streptomycin aerosol mask nebulizer tech- nic with demand valve	4	2 gm.	144-1200 cc.	0-320 mcg/cc.	12-250 mcg/cc.	
	1	4 gm.	50 cc.	400 mcg/cc.	110 mcg/cc.	1 test: ½ hr.—25 mcg/cc. 2 hrs.—5 mcg/cc.
Streptomycin by intra- muscular administra- tion	13	2-3 gm.		0		3 tests: 1 hr.—33 mcg/cc. 2 hrs.—25 mcg/cc. 3 hrs.—17 mcg/cc.

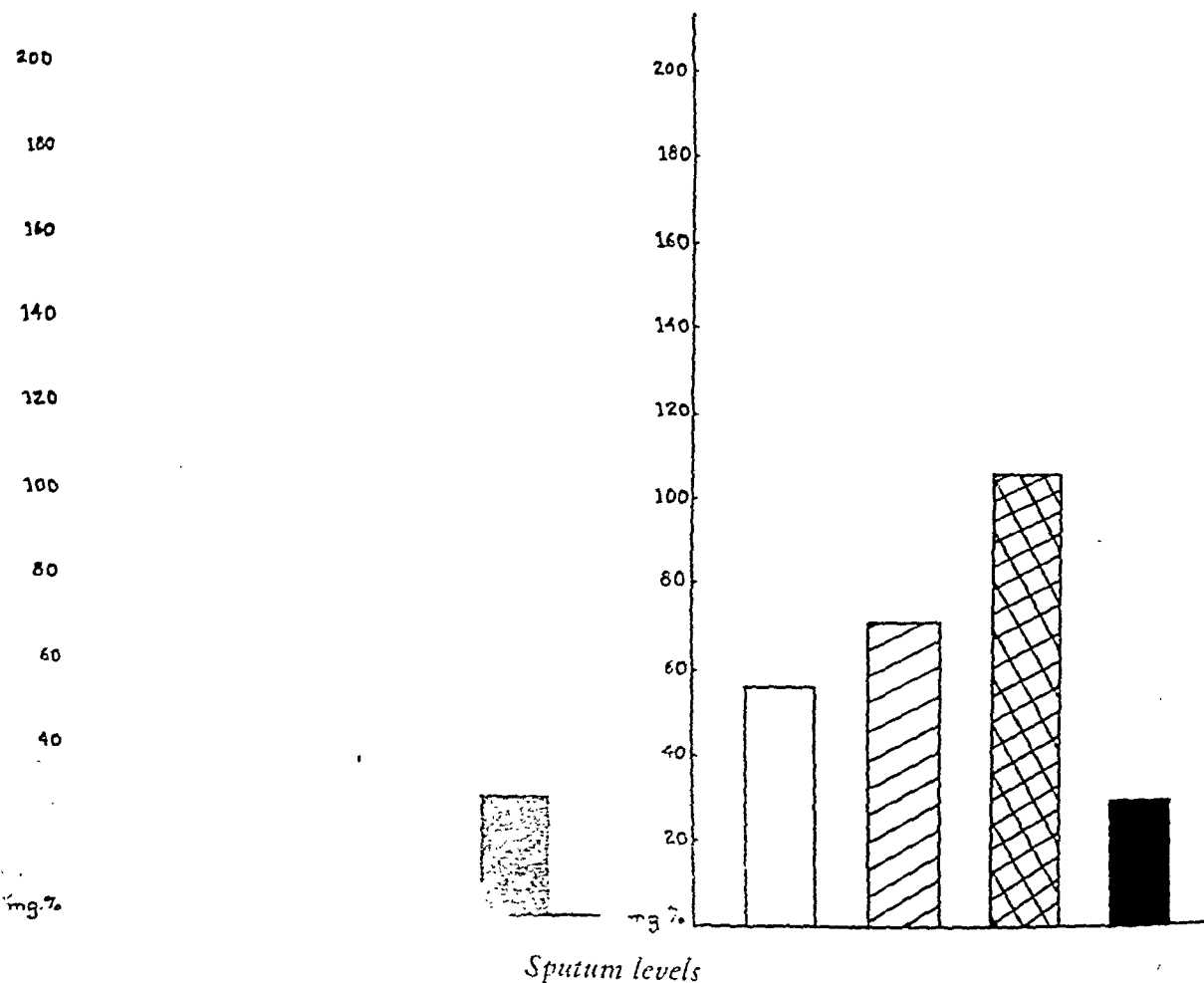


### SULFATHIAZOLE LEVELS WITH MASK NEBULIZING TECHNIC

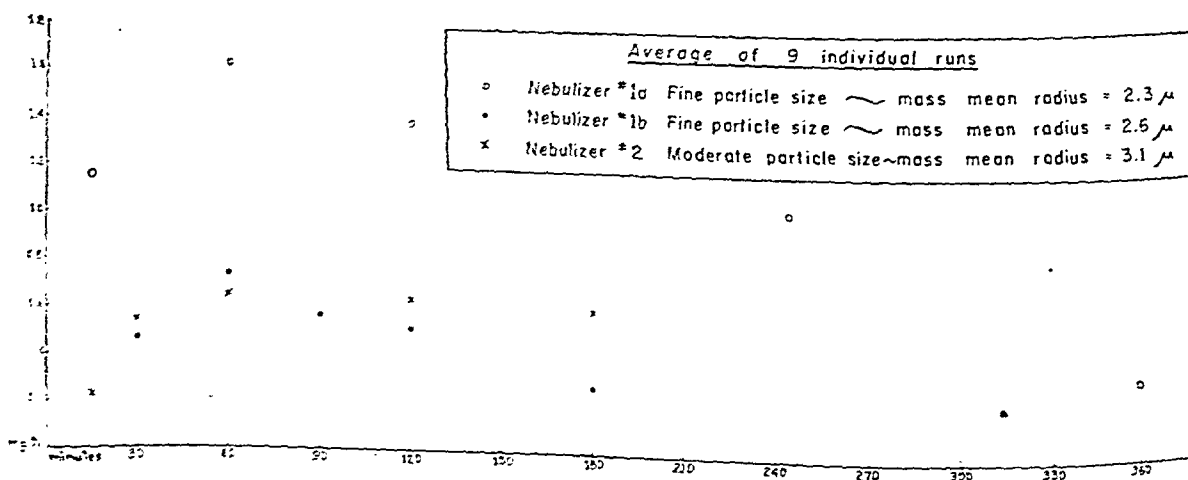
#### Blood Levels



## SULFATHIAZOLE LEVELS WITH MASK NEBULIZING TECHNIC



## BLOOD ABSORPTION CURVES WITH MASK NEBULIZING TECHNIC



5 cc. Combisul (5% sulfathiazole-5% sulfadiazine) in distilled water given as one inhalation using demand valve at 8-10 liters oxygen flow/minute.

AVERAGE SULFATHIAZOLE LEVELS AFTER INHALATION OF 5 CC. 5% SODIUM SULFATHIAZOLE WITH MOUTH NEBULIZER TECHNIC					
<i>No. Tests</i>	<i>Blood 1 hr.</i>	<i>No. Tests</i>	<i>Sputum 2-4 hrs.</i>	<i>No. Tests</i>	<i>Urine 2-4 hrs.</i>
39	1.13 mg. %	32	15.32 mg. %	32	30.16 mg. %

AVERAGE SULFATHIAZOLE LEVELS AFTER INHALATION OF 10 CC. 5% SODIUM SULFATHIAZOLE WITH MASK NEBULIZER TECHNIC				
	<i>No. Tests</i>	<i>Blood 1 hr.</i>	<i>Sputum 0-2 hrs.</i>	<i>Urine 0-2 hrs.</i>
Breathing through nose and mouth	27	0.21 mg. %	78.7 mg. %	5.4 mg. %
Breathing through mouth only	27	0.45 mg. %	136.6 mg. %	4.8 mg. %

## CASE REPORTS

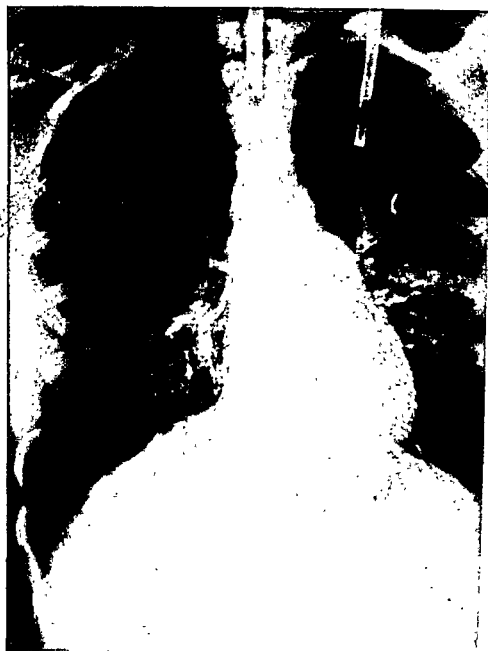
### BRONCHIECTASIS

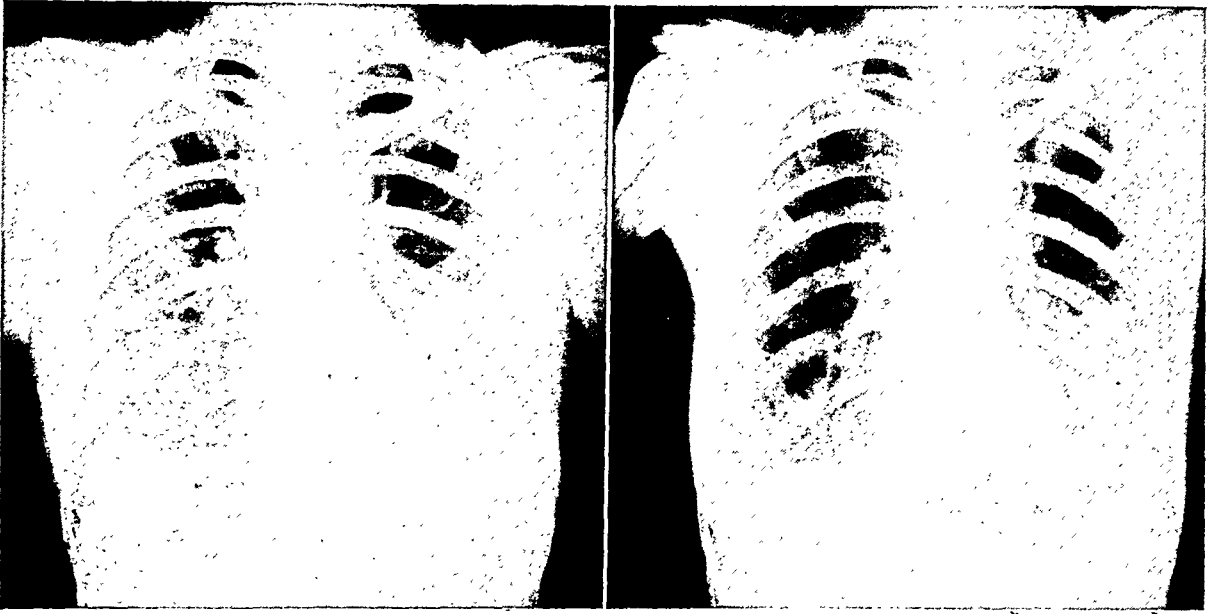
Bronchogram: Cylindrical bronchiectasis of left lower lobe. Female, 29 years, had failed to improve clinically with previous course of 4,000,000 units intramuscular penicillin in twenty-five days.

Marked clinical improvement on continuous penicillin aerosol treatment 50,000 units three times daily for ten weeks preoperatively.

Uneventful lobectomy and postoperative course one year ago without sequelae.

Sputum culture: Before treatment—streptococcus hemolyticus, streptococcus anhemolyticus, staphylococcus aureus. After treatment—escherichia coli.

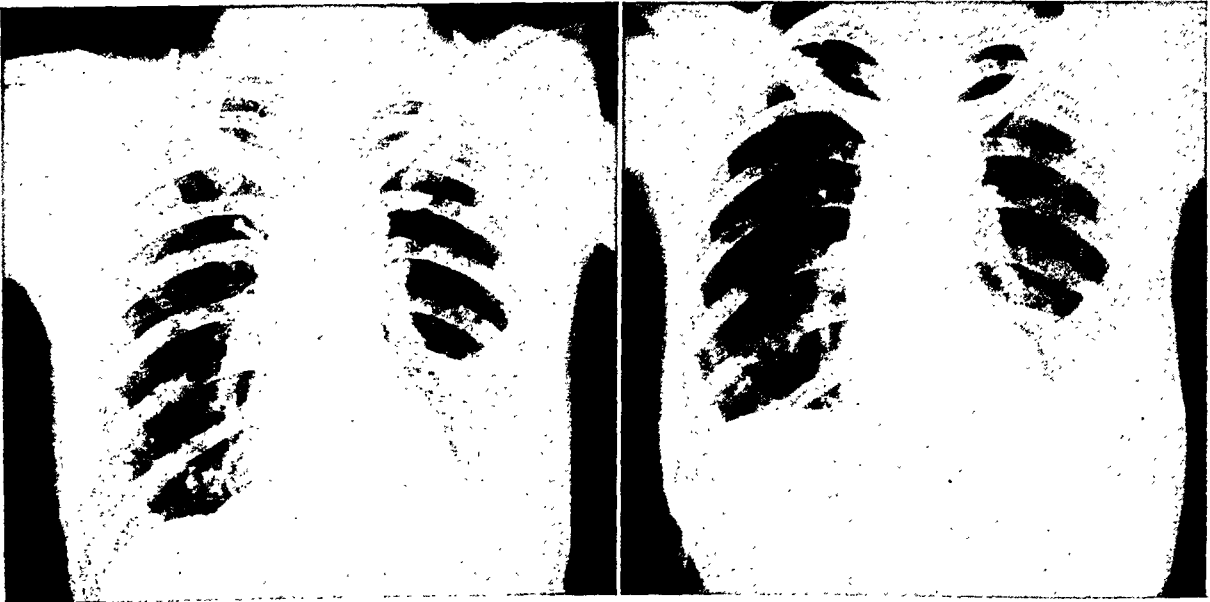


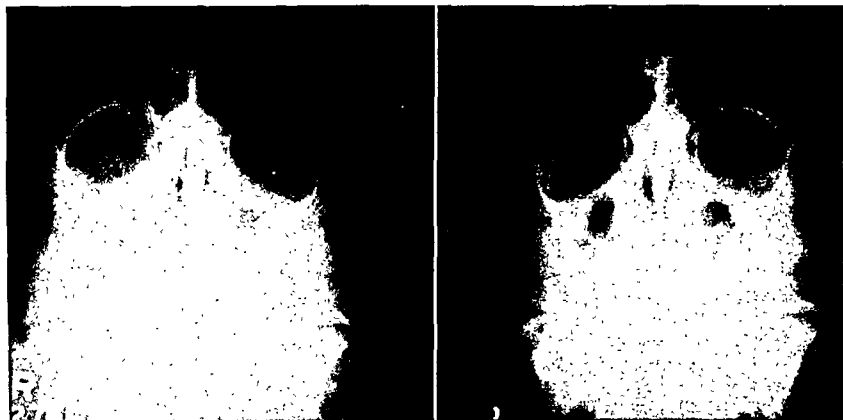


#### ACUTE LUNG ABSCESS

Female, 40 years, treated with combined intramuscular (1,440,000 units) and aerosol (3,000,000 units) penicillin for twelve days with some x-ray clearing of pneumonitis and decrease in size of abscess cavity. Substitution of helium-oxygen mixture to nebulize penicillin during following thirteen days, with total of 3,250,000 units aerosol and 1,920,000 units intramuscular penicillin resulted in more rapid and more complete x-ray clearing, with slight persisting fibrosis but no residual lung abscess.

Complete x-ray clearing on film taken five weeks after hospital discharge. Sputum culture: Before treatment—*streptococcus viridans*, *staphylococcus aureus*. During and after treatment—*aerobacter aerogenes*.





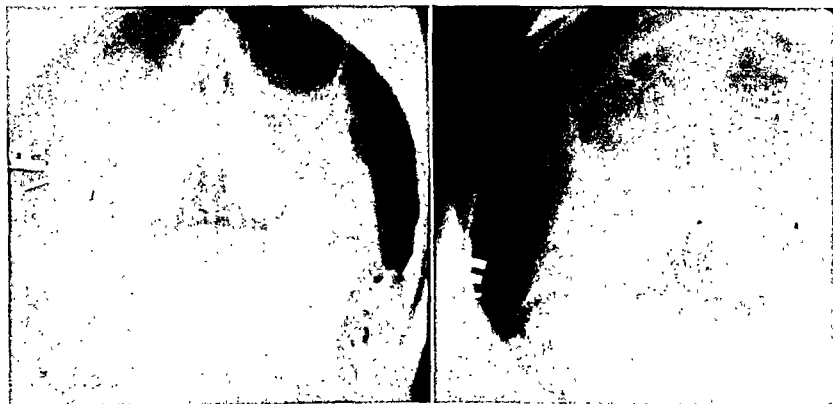
#### CHRONIC SINUSITIS

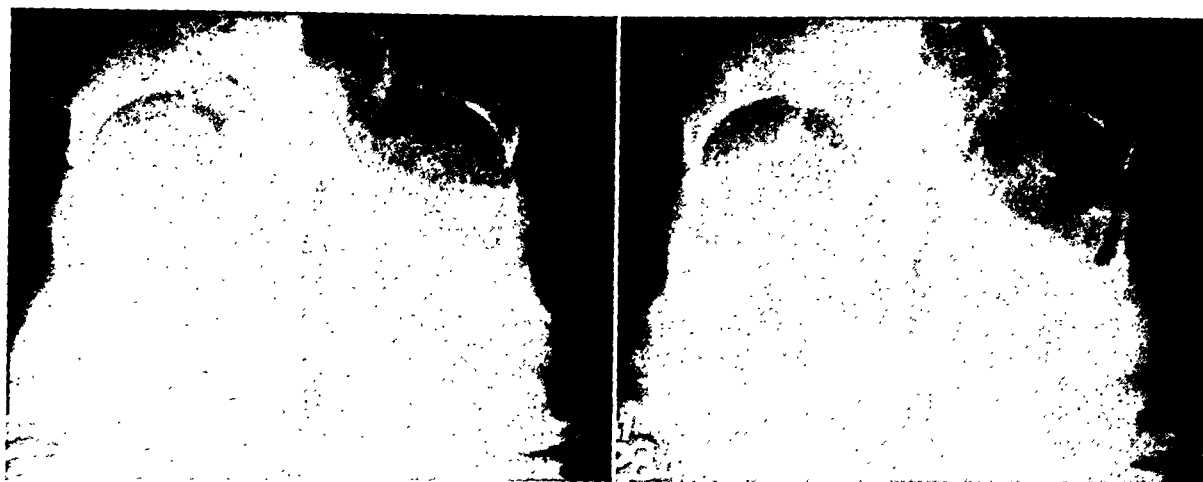
Male, 15 years, treated with penicillin aerosol and negative pressure, 50,000 units two or three times daily for eleven days. X-rays revealed clearing of the ethmoids and both antra.

Patient remained asymptomatic for over six months when he had an acute flare-up of sinusitis and was treated with penicillin aerosol and negative pressure, 50,000 units two or three times daily for ten days.

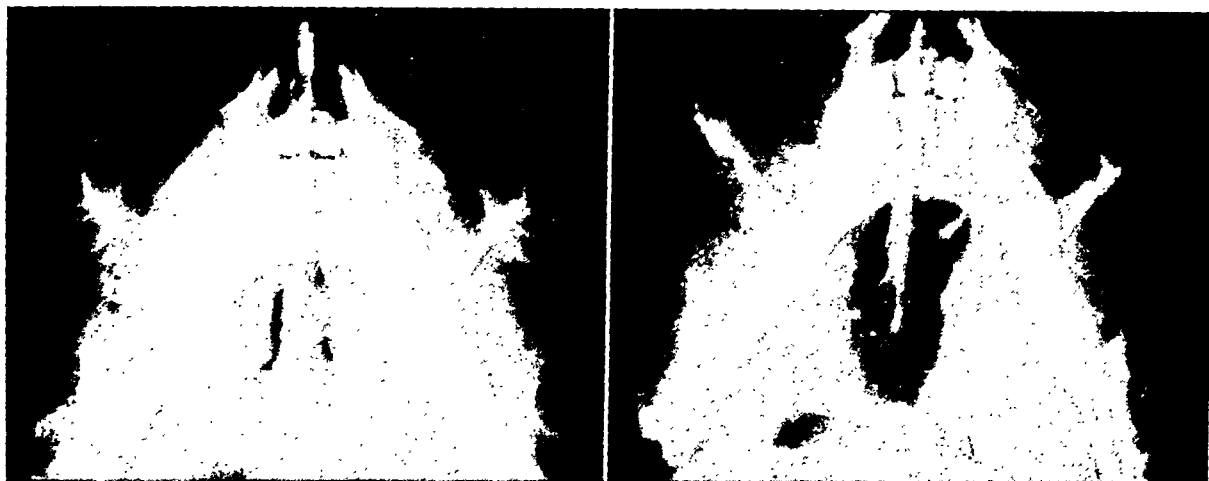
Marked x-ray clearing of right antrum and moderate clearing of left antrum. Marked symptomatic improvement, sustained for past eighteen months.

Throat culture: Before treatment—*staphylococcus aureus*. After treatment—*aerobacter aerogenes*.



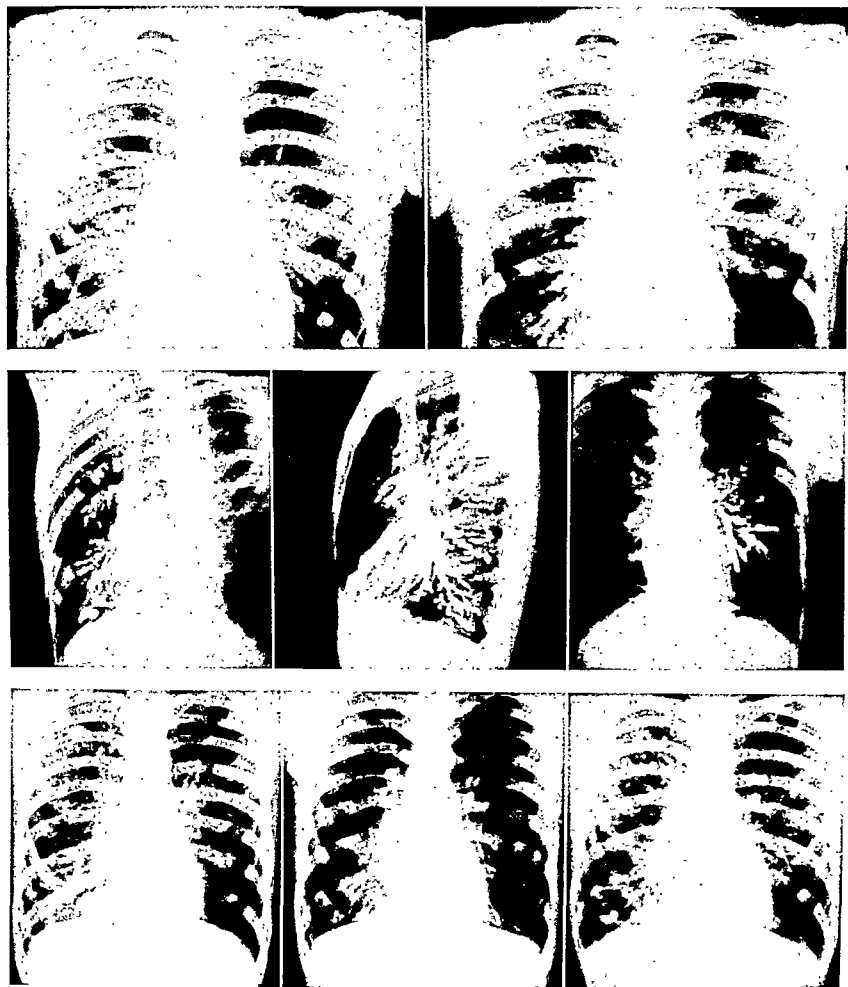


*Antral views (First course)*



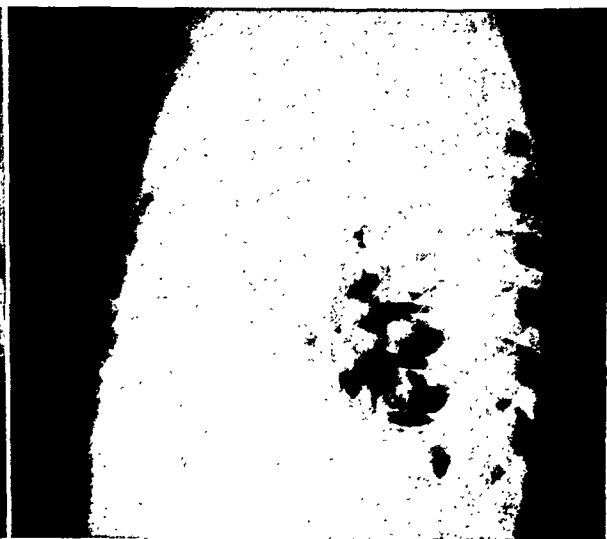
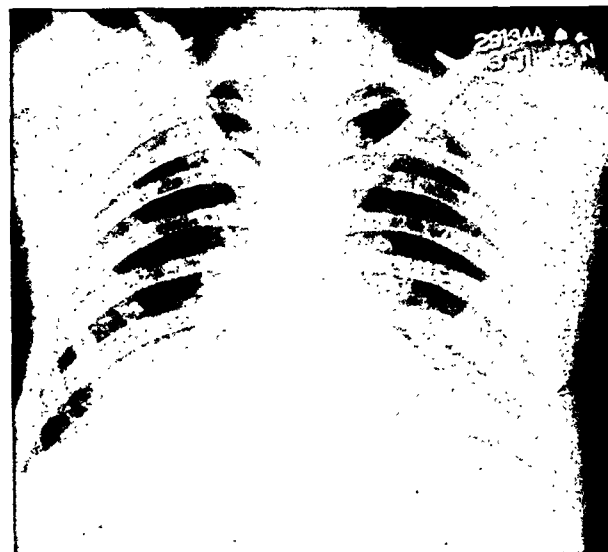
#### CHRONIC SINUSITIS

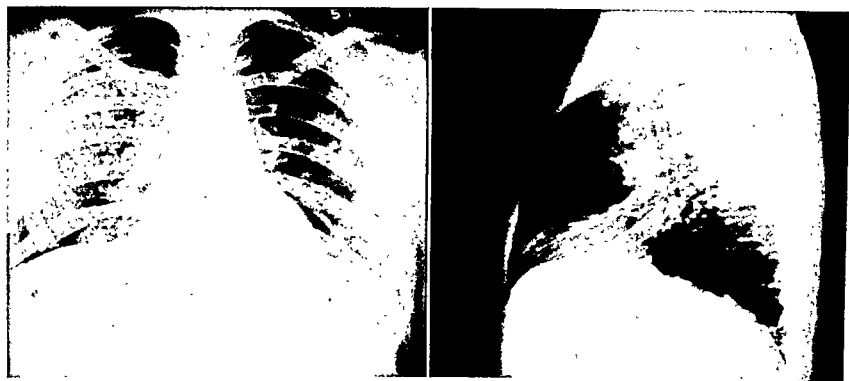
Male, 33 years, treated with penicillin aerosol and negative pressure, 50,000 units four times daily for three weeks. X-ray showed complete clearing of sphenoid sinuses twelve days after institution of therapy. Marked symptomatic improvement for two months when patient had acute flare-up of maxillary sinusitis, although sphenoids remained clear. Treated with penicillin aerosol and negative pressure 50,000 units, four times daily for ten days. Moderate x-ray clearing at end of course; marked symptomatic improvement sustained for over six months. Sputum culture: Before treatment—streptococcus viridans. After treatment—aerobacter aerogenes.



#### BRONCHIECTASIS, BRONCHIAL ASTHMA, PULMONARY EMPHYSEMA

Male, 22 years, chronic respiratory invalid showed striking sustained clinical improvement since continuous penicillin aerosol therapy was started two years ago with dosage of 50,000 units four times daily. Recently treated for two weeks with streptomycin aerosol, 1 gram daily, combined with usual dosage of penicillin, without further change. X-ray clearing of areas of pneumonitis and moderate decrease in extent of peribronchovascular infiltration, despite permanent structural damage and increase in size of cystic areas in right lower lung field. Sputum cultures: Before treatment—*streptococcus viridans*. During treatment—*escherichia coli* (no growth while on streptomycin plus penicillin).





(Opposite page and above)

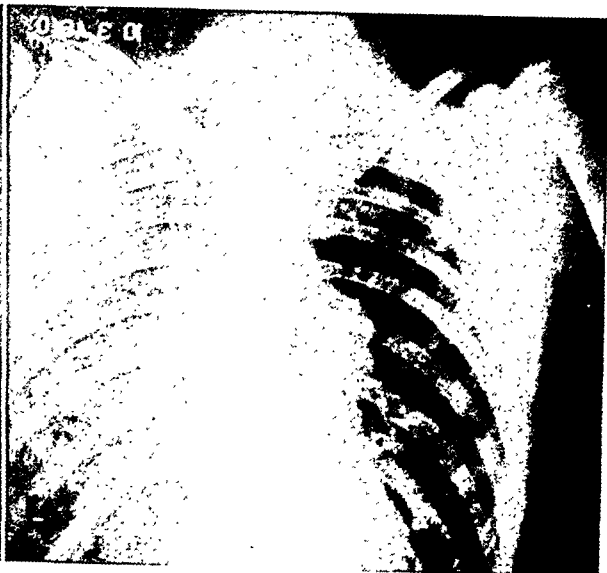
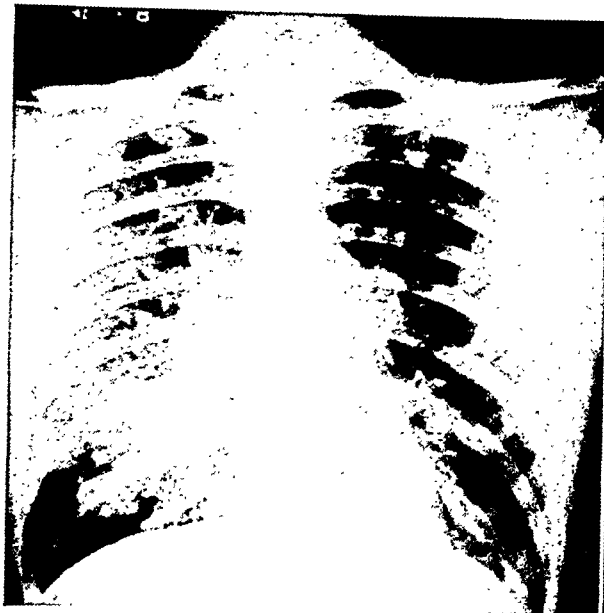
#### SUPPURATIVE PNEUMONIA

Male, 16 years, entered hospital with suppurative pneumonia of RML, and some involvement of both lower lobes. Treated with total of 8 million units intramuscular penicillin in first three and one-half weeks, combined with penicillin aerosol (total 5 million) in the latter two weeks, followed by one week of aerosol alone. Definite clinical improvement. Repeat bronchoscopy revealed a nonaerating RML; penicillin aerosol administered for three and one-half weeks, doubling dosage and using helium-oxygen mixture for nebulization (total 10 million units). Neosynephrin, 1 per cent, inhaled prior to each treatment. Patient became asymptomatic; bronchoscopy revealed a patent rim bronchus, and lipiodol now penetrated into the RML without evidence of abscess cavity or bronchiectasis. Sputum culture: Before treatment—staphylococcus albus. After treatment—escherichia coli.



#### ACUTE AND CHRONIC SINUSITIS

Female, 33 years, treated with single daily inhalations (40,000) units for a total of seven treatments in twelve days. X-ray showed marked clearing of right antrum and moderate clearing of left antrum. Symptomatic improvement sustained for over six months.



(Opposite  
page)

# SUPPURATIVE BRONCHOPNEUMONIA, BRONCHIAL ASTHMA. CHRONIC BRONCHITIS, CHRONIC SINUSITIS

Male, 16 years, had responded with marked improvement to sinus penicillin aerosol combined with intermittent negative pressure one and one-half and one year previously. Present admission for severe bronchopneumonia caused by hemolytic staphylococcus aureus, which showed very little response to a regimen of intramuscular penicillin for three weeks. Dosage raised to four million units daily in the latter ten days. Penicillin resistance of organism was five units per cc. Substitution of continuous penicillin aerosol in dosage of only one million units daily for seven days resulted in striking clinical improvement, moderate x-ray clearing, and disappearance of staphylococcus aureus on sputum cultures and bronchoscopic aspiration, escherichia coli predominating. Staphylococcus aureus reappeared when aerosol was stopped, but disappeared again on regimen of penicillin aerosol, 100,000 units four times daily for eighteen days. Chest x-ray showed a residual diffuse fibrosis and enlarged node in left hilar region, although patient has remained fairly well at home for past eight months.



## CHRONIC SINUSITIS

Male, 50 years, treated with penicillin aerosol and negative pressure, 25,000 units two or three times daily for fourteen days.

X-rays revealed initial increased involvement of left antrum with subsequent appreciable clearing.

Clinical improvement has been sustained for past fifteen months.

Sputum culture: Before treatment—staphylococcus aureus-streptococcus an-hemolyticus. After treatment—streptococcus viridans.



## EXPERIMENTAL

# Cafergone For Relief of Headache

ROBERT E. RYAN

ST. LOUIS

THE AGENT Cafergone is a preparation containing 1 mg. ergotamine tartrate and 100 mg. of caffeine. Ergotamine tartrate is not a new drug so far as the subject of headache is concerned. It has been used for many years and has been very successful in aborting acute attacks of migraine. The preparation also contains caffeine which has been used for the relief of headaches principally in combination with acetophenetidin and acetylsalicylic acid.

A previous report of the new product was made by Horton, Ryan, and Reynolds<sup>1</sup> early in 1948. The purpose of this report is to evaluate further the merits of the product in regard to the relief of certain types of headaches.

### RESULTS

Of the 62 patients who were treated with Cafergone 46 or 74 per cent received excellent results; 6 or 9 per cent obtained some (good) results, and 10 or 17 per cent did not obtain any results at all (poor). As stated previously the toxic symptoms were all of the abdominal distress type.

Some of the patients included in this report were so enthusiastic about the relief obtained from their headache attacks with Cafergone that they wanted to use the preparation habitually at certain hours of the day when they usually had their attacks. This, of course, was discouraged. All of the patients who experienced excellent

TABLE 1  
ADMINISTRATION OF CAFERGONE IN CASES OF HEADACHE

TYPES OF HEADACHE	CASES	SIDE EFFECTS	RESULTS		
			EXCELLENT*	GOOD**	POOR***
Migraine .....	40	3	32	3	5
Histaminic cephalgia .....	12	2	9	2	1
Tension .....	10	0	5	1	4
Total .....	62	5	46	6	10

\*Complete relief of symptoms.

\*\*Partial relief of severity and duration of symptoms.

\*\*\*Little or no relief of symptoms.

It should be pointed out that the best average dose of this product was found to be two tablets, not one. It might, therefore, be best for the manufacturer to have each tablet contain 2 mg. of ergotamine tartrate and 200 mg. of caffeine. Another important factor in administration of this agent is to take the tablet at the onset of the attack of headache. If the tablet is taken after the headache is very pronounced, usefulness of Cafergone is very much less effective.

A very small percentage of the cases covered in this report experienced toxic symptoms. All of these toxic symptoms consisted of nausea and abdominal cramps and distress. Those experiencing nausea did not have any vomiting. Results obtained with Cafergone are shown in Table 1.

results carried these tablets with them everywhere and would not dare part with them.

Cafergone is not a cure of the types of headaches studied in this report or of any other type of headache. However, it definitely seems to be an excellent preparation to use to abort headaches, especially those of the migraine and histaminic cephalgia types. In other types of headache the results are not as favorable, but any preparation which can help in the treatment of migraine and histaminic cephalgia should be well received.

### REFERENCE

1. HORTON, B. T., RYAN, R. E., and REYNOLDS, J. L.: Clinical observations on the use of E.C.-110; a new agent for the treatment of headaches. Proc. Staff Meet., Mayo Clin. 5:105-108 (March 3) 1948.

# The Medical Bookman

## PSYCHIATRY IN GENERAL PRACTICE\*

Macbeth: How does your patient, doctor?

Doctor: Not so sick, my lord,  
As she is troubled with thick-coming fancies  
That keep her from her rest.

Macbeth: Cure her of that.

Canst thou not minister to a mind diseas'd,  
Pluck from the memory a rooted sorrow,  
Raze out the written troubles of the brain  
And with some sweet oblivious antidote  
Cleanse the stuff'd bosom of that perilous stuff  
Which weighs upon the heart?

Macbeth: Act V, Scene iii.

PSYCHIATRY has been catapulted from a position of relative obscurity into one of great and sometimes embarrassing prominence in recent years. There is still need for a book which will provide medical men specializing in other fields and the general practitioner with a well charted map in the confusing territory of psychiatry, without causing the nonpsychiatrically trained practitioner to stumble and fall over the psychiatry language barrier.

To rephrase in the language of the author, "This volume is an attempt to lift psychiatry out of the realm of terra incognita for those whose primary efforts are spent in other fields. It is the author's firm belief that most of preventive psychiatry lies, and will continue to remain, in the hands of the general practitioner. This is so because the total number of psychiatrists, even if evenly distributed throughout the country, is inadequate to care for the number of patients needing help with their emotional problems. Fully half the patients to be found in any doctor's office have come because of emotional problems rather than organic disease. Only by removing the aura of mystery from the practice of psychiatry, can psychiatry be rendered a useful tool in the hands of those who deal with the greatest number of psychiatric patients."

This reviewer's feeling is that Dr. Thorner

has accomplished his purpose in exemplary fashion. "Psychiatry in General Practice" devotes over 75 per cent of its pages to a highly intelligible description of the dozen or more "types" of patients most commonly seen in the general practitioner's office; this approach permits the reader to attempt his own psychiatric syntheses, and prepares him well for the brief analysis at the end of the book, the classification of mental disorders, and the description of therapeutic aims and technics.

The body of the book consists of fourteen chapters describing as many groups of patients which the reader immediately recognizes as people he has seen before. The first of these descriptive chapters deals with "Intelligent People" and the special difficulty they have in adapting emotionally and intellectually in a world in which they are members of a minority group. In six case histories replete with incidents which many will recognize as analogues of troubles their children and friends' children have had, the author draws a remarkably vivid picture of the discontent with routine, extreme independence, social hardships, early scholastic success, loneliness, and eventual emotional distress through which these precocious children live. The author's summary of this chapter condenses his presentation of the problem:

Intelligence is a capacity for acquiring and using facts and is a native endowment in all people. In some the capacity is great, in others less. It cannot be increased, but less than full usage of intellectual capacity may be brought about by interfering emotional disturbances which are relatively frequent in the intellectually superior. Intellectual capacity may be diminished by destructive brain diseases and by the aging processes as in dementing people. Intellectually superior people make great demands on life for the opportunity to use their capacities, and the difficulty of obtaining this opportunity often involves frustrations and unhappiness that are spared to less gifted people.

Everyone has emotional problems from time to time, but in both above and below average people problems are more frequent. Anyone who differs significantly from the majority of his fellow men is apt to find difficulty along the road. Sometimes the superintelligent person has elaborations of his difficulties that come close to being psychotic, although actual psychoses in superintelligent people are not signifi-

\*Psychiatry in General Practice. By Melvin W. Thorner, M.D., D.Sc., Assistant Professor of Neurology, The Graduate School of Medicine, University of Pennsylvania. 659 pages, Philadelphia and London, W. B. Saunders Company, 1948. Price \$8.00.

cantly more frequent than in subnormally or normally intelligent people. However, many have more or less severe personality and emotional struggles in childhood due to failure to fit in with children of the same chronological age. A superior intelligence is a mixed blessing carrying with it the possibility of positions of highest leadership and accomplishment on the one hand, and on the other the loneliness and misunderstanding which may be the cross anyone with unusual talents may have to bear.

**D**ULL People," those of less than average intelligence, present the other side of the coin. Their difficulty is in adapting to a world in which the majority of people are cleverer than they. Four very detailed and sympathetically presented case histories describe the generally affectionate, obtuse, backward child who is unable to meet the competition of his fellows at any stage: play progress, school achievement or the comprehension of life's concrete and abstract problems.

The dull person is "unable to perceive facts and realize their relationship to each other in any useful semblance of order. Because of this low intellectual capacity he is easily satisfied with the simpler aspects of living and less irked than most by dullness and routine. He learns slowly and painfully and has no great urge to exceed his own capacities. Industry has great need for people with the less marked varieties of mental deficiency, for there are many routine tasks to which they are admirably suited. However, certain social problems arise which are peculiar to the mentally deficient.

Such individuals must be protected against being outsmarted and unfairly treated by more intelligent, but less scrupulous, people. Dull people are an easy prey to rabble rousers, cultists, and agitators who incite them with strident and repetitious propaganda. They must be hindered from acts which their ignorance prevents their recognizing as crimes against society. Dull people frequently have emotional difficulties and, since they are less able to solve their own problems than most, the services of the physician and of the educator are often required to help them reach the best compromises with life of which they are capable.

In "People and Catastrophes," Dr. Thorner presents the patient as the product of the impact of an often hectic environment upon his sometimes limited hereditary capacities. War, disease, and social and economic failure occupy an important place in human economy. These events are blamed as the cause of all the trouble almost invariably when followed by emotional or physical suffering. "All people react in some way to the catastrophe or it would not be so labelled, but each person responds to adversity in his own characteristic fashion. Just as weeds grow only in suitable soil, and in a suitable climate, so do the more prolonged mental disturbances persist only in the mental soil which gives them nourishment."

"Unhappy People" may represent simple situational unhappiness, may be unhappy in connection with other emotional disorders, or may suffer actual manic-depressive disease. Many external factors, social and economic, effect the happiness of all people; however, the major factor which determines whether a man shall be happy or sad is his internal and not his external resources.

There are unhappy people who report to the doctor ascribing external causes for depression. The reader will recognize: "My wife does not understand me"; "With the world in such a mess, what have any of us to look forward to?"; "The children are more than I can take and I am worn out caring for them."

Also readily recognized are the commonly assigned internal causes for depression: "My family is in a bad way and it is all due to the way I have failed them as a father"; "If only I hadn't been so untrue to my wife, I'd be all right today."

Dr. Thorner mentions many other patient-authored rationalizations for chronic unhappiness. It is pointed out significantly that prolonged depression is not confined to those who suffer from manic-depressive disease. Susceptible neurotic people not infrequently present pictures of unhappiness of a prolonged type. Similarly it should not take too much diagnostic discrimination to identify the healthy people in whom overwhelming misfortune may produce prolonged periods of unhappiness. Superb case histories serve to illustrate these common conditions and help the reader to define his own conceptions of normal and abnormal reactions to adversity.

In the author's words, "A certain amount of caused and apparently causeless unhappiness is an integral part of life itself and the normal forces of restitution are quite adequate to compensate for the situation in any healthy person. . . . In most people the transitory nature of the distresses life brings to every person is characterized by the Biblical statement, 'Weeping may endure for a night, but joy cometh in the morning.' The frequent repetition of this quotation to a depressed patient often seems effective in introducing some ray of hope into his grey life.

"Age has a very definite effect upon a person's susceptibility to depressions. In the young, depressions are uncommon, while in older people depression is a relatively frequent syndrome as in the senile dementia and in the psychiatric conditions of late middle life—the 'involutional' period. The

depressions which are seen in young people always carry with them the suspicion that they are the harbingers of manic-depressive disease and that repeated episodes may be expected to occur. However, the depressions of the young are each apt to be short-lived compared with those of older people, where the zest for living and the striving toward goals are at a lower ebb."

**D**EMENTING People" lose the ability they once possessed of reasoning, remembering, and calculating. Pathologic processes which permanently destroy bits of brain tissue are not the least of many things that may happen to change the mental life of a man. The pathology may be traumatic, inflammatory, or degenerative, but the result is the same. Almost anyone who survives long enough demented to a greater or lesser degree from senile changes and arteriosclerosis. The carefully recorded case histories in this chapter illustrate dementia resulting from paresis, encephalitis, uncontrolled diabetes, avitaminosis, epilepsy, space-taking lesions within the skull, trauma, alcohol and other poisons.

The brief story of a boy suffering from a primary infection of the brain itself is one most readers can reproduce from their own practices:

Harry Stack was a nice boy who had an average number of broken windows to his credit, and more than a passing acquaintance with the truant officer. His grades in school were a little better than satisfactory to him, and a little less than satisfactory to his parents. What Harry really liked was a good game of rough and tumble football or baseball. It was a little difficult to get him to go to the store on errands, but he could always be counted upon to be on time for dinner. His breakfast hour was somewhat unpredictable.

Harry was no real source of concern to anybody except his mother who thought he should be more careful of his clothes. His health was good except that he had teeth which stood out valiantly against neglect until it was more than enamel and cementum could bear, but Harry could be induced to go to a dentist only by the more severe variety of toothache.

In the winter of his great affliction Harry was disappointed. He waited and waited for snow, but none came. There was just an intermittent drizzle of rain with a cold wind to rub it in. Harry moped around the house because there wasn't anything else to do. He had one bad cold and then got over it. A few weeks later the "grippe" began to make its rounds. First Harry's mother got it and then he got it. His mother tied a bag of camphor around his neck and gave him lots of sage tea, but poor Harry got worse and would hardly answer when he was spoken to. With a sigh for the budget his mother called in the doctor.

It was a long time after the epidemic of "grippe" had

left the town with the coming of spring before Harry's stupor lightened a little. When he spoke it was a queer "mouthy" tone because he was having so much difficulty in making his tongue, lips, and larynx cooperate. With the passage of time he gained more strength and better voice. He never returned to the state of the normal, mischievous boy who had gotten sick. Where he had been active and gregarious he was now seclusive and quiet. His mischiefs had been of a light-hearted, unthinking kind; now they were sly and contained premeditated barbs. He had been well liked before, but now he was only tolerated.

A short trial at school when he was well enough to go convinced everyone concerned that the academic life was forever closed to him. He was not able to do the same level of work he had done before he had the "grippe." Forced to stay at home he tried his mother sorely. He demanded a great deal of attention and lost his temper violently when crossed. His muscles became stiffer and his face blanker. During periods of relative repose the fingers of his semiflexed arms began to display an incessant, tremulous motion. These physical difficulties, as well as the mental deficits which were daily becoming more prominent, made the necessity for institutional care obvious.

At the state mental hospital Harry was found to have the neurologic syndrome of paralysis agitans with a blank facial expression, coarse tremors at rest, rigidity, and a festinate gait. His behavior was odd and he frequently differed with the attendants and doctors as to what was best for his welfare. He showed a little reasoning ability and a formal psychometric estimation was low but necessarily inaccurate. It showed a wide scatter in Harry's ability to perform intellectual tasks, but most of the tests fell below the eight-year-old level.

"Confused People" are often just overtired or may be suffering emotional stress beyond their capacity to endure. Complete recovery is the rule. The toxic psychosis may be secondary to infection, hyperthyroidism, diabetes mellitus, acute alcohol intoxication, barbiturate poisoning, and other endogenous and exogenous toxins. Recovery in these instances is usually dependent upon elimination of the offending agent and/or treatment of the underlying pathologic physiology.

"Anxious People" demonstrate a variety of neurotic states: hysteria, obsessions and compulsions, somatic conversion symptoms, and anxiety neuroses. In the words of Schopenhauer, "Hypochondria is a species of torment which not only makes us unreasonably cross with the things of the present, not only fills us with groundless anxiety on the score of future misfortunes entirely of our own manufacture; but also leads to unmerited self-reproach for what we have done in the past."

That abnormal emotional states, chiefly anxiety, produce physiologic changes in the autonomic nervous and endocrine systems, and elsewhere, is the thesis of the new school of psychosomatic medicine. Here, in proper relation to other psychi-

atric considerations, is discussed the interrelation between anxiety and the physiology of the human body. The discussion also concerns itself with the etiologic role long continued anxiety plays in such conditions as essential hypertension, ulcerative and mucous colitis, hyperthyroidism, asthma, peptic ulcer, and the so-called neurogenic dermatoses.

It is properly pointed out, at the end of a chapter replete with brilliantly recorded case histories, that anxious people are not immune to physical disease. "Neither the diagnosis of anxiety nor of any other psychiatric condition can be safely made by the exclusion of anatomic or metabolic disease, alone. Diagnosis by such exclusion presumes that all possible anatomic and metabolic diseases are known to the examining physician, that adequate diagnostic tests exist for all, that these tests have all been competently done, and that they are negative in result. Symptoms unsupported by available physical evidence are not necessarily pathognomonic of a disturbed emotional state. The diagnosis of an anxiety state is an independent diagnosis which can be made whether other disease exists concurrently or not. It is made on the basis of the history, the type of symptoms the patient has, whether the symptoms are purposeful, whether overt anxiety is present, and the defensiveness with which the patient resists any attempt to minimize the ominousness of his symptoms."

"Suspicious People" are often simply the products of our deeply rooted instincts for self-preservation. "Each person has certain features of his existence which are most highly prized by him and constitute his image of his own individuality. A rich man may clutch his wealth with a tenacity made stronger by the threats he sees in the envy of his less favored neighbors. A native of one country patriotically defends his national individuality against the real or fancied threats of the natives of other countries. In the period following the Civil War many Southerners were suspicious of any Northerner. A white man may wonder if the mere existence of the Negro does not constitute a challenge to his own superiority."

While suspicion of real or fancied threats against one's existence is part of normal living, pathologic suspiciousness is found in a large variety of illnesses (paranoid conditions), or it may be the essential element in the "steely cold, logical system of suspicions of the true paranoiac."

Common among the paranoid conditions is that accompanying physical illness. People who are not psychotic may give way to an obvious episode of unwarranted suspiciousness under the impact of personal reverses and/or physical disease. Especially pertinent is Dr. Thorner's case history describing the pathologic suspiciousness of his colleagues which appeared in a "Dr. Morgan" during physical illness. To summarize the story, "Mrs. Morgan does not permit her husband to work too hard, or to forget his rubbers on rainy days. She knows that fatigue, economic worry, or infections, are stresses which are apt to make Dr. Morgan paranoid."

In readable, incisive and commendably thorough fashion Dr. Thorner devotes separate chapters to "Queer and Twisted People," "People and Sex" and the special problems of older people, children, and "The Rest of Us."

The last two sections of the book are devoted to discussions of psychiatric and physical examinations, the patient's viewpoint, therapeutic procedures, classification of mental disorders, and commitment procedures.

These discussions contain analyses which follow naturally and logically from the syntheses of the previous fifteen chapters. In them one may find much necessary practical information as well as many interesting patient histories illustrating the use of short forms of psychotherapy available to all physicians: personal orientation, reassurance, persuasion, and suggestion. In general practice and in the specialties, these short forms of psychotherapy may be the mainstay of treatment for many patients and are appropriately analyzed in detail, while the specialized procedures reserved to psychiatrists are described more briefly.

According to Alexander Pope, "The proper study of mankind is man." Dr. Thorner has produced a book about man which should interest every physician. The understanding which is afforded by his approach to the problem of "Psychiatry in General Practice" will be of daily help to general practitioner and specialist alike. Many of the clinical histories are small literary masterpieces, some with an O. Henry twist at the close. These, possibly the most valuable portion of the work, will be treasured by even the casual reader and used later to illuminate the darkness and fog which so often initially obscure the problems of our emotionally distressed patients.

E. C.

# New Books Received

## ► MANUAL OF CLINICAL LABORATORY METHODS - - -

*By Opal E. Hepler, Ph.D., M.D., Associate Professor of Pathology, Northwestern University Medical School; Director of the Clinical Laboratories, Montgomery Ward Clinics and Passavant Memorial Hospital, Chicago. 4th Edition, 387 pages, illustrated. 1949, Charles C Thomas, Springfield, Illinois. Price \$8.50.*

Starting as an outline to guide students in the laboratory in the course in clinical pathology at Northwestern University Medical School, the work has evolved into the present text. Detailed instructions are given for each procedure followed in the various tests conducted in the laboratory by medical students and medical tech-

nicians. For each test, the discussion includes: principles of the test, various steps (in the order of performance), calculation of results, interpretations and significance, and sources of error. Coverage of material is very complete and the latest and most practicable methods are given in each instance.

A. E.

## ► THE SKIN DISEASES - - -

*By James Marshall, M.D. 1948, Cambridge, at the University Press; New York, The Macmillan Company. Price \$7.50.*

James Marshall has written what is intended to be a handbook for the general practitioner or a textbook for the medical student; he fulfills that purpose quite well.

The first portion of the book, with its introduction and description of primary lesions, anatomy, diagnostic approach, and principles of treatment, is better than average for a small textbook. The section on specific therapy, however, is frequently vague.

The text for the more common dermatoses in the main is not too complete. The greatest error appears

to be the effort to include many of the rare dermatoses without giving them more than passing notice. As a result, the less common dermatoses are sometimes vaguely alluded to but inadequately described.

Some of the classification and concepts differ from those entertained in the United States, and in fact, the British outlook is very apparent in many sections.

The book is generously supplied with good black and white illustrations and also has a few illustrations reproduced in color.

I. F.

## ► THE CLINICAL MANAGEMENT OF VARICOSE VEINS - - -

*By David Woolfolk Barrow, M.D. 155 pages, illustrated. 1948, Paul B. Hoeber, Inc., New York. Price \$5.00.*

This text, which is based on observations made by the author on approximately 2,500 patients with varicose veins, or their records, is limited to a study of varicose veins of the leg. In the twelve chapters of the monograph, Dr. Barrow discusses the diagnosis, therapy, and after-care of the varicose extremity. As the author states in his preface, "... Controversial points

are minimized. References are few, and these usually to considerations of physiology or pathology which cannot be readily demonstrated by examination of the patient. ... While it is realized that other techniques may be equally applicable, the ones pictured here have given satisfactory results in the author's hands."

C. S.

## ► HEMATOLOGY - - -

*By Cyrus C. Sturgis, M.D., Professor and Chairman of the Department of Internal Medicine, University of Michigan Medical School, and Director of the Thomas Henry Simpson Memorial Institute for Clinical Research, University of Michigan. 915 pages. 1948, Charles C Thomas, Springfield, Illinois. Price \$12.50.*

In this comprehensive study, Dr. Sturgis has extensively described and compared the disorders of the blood from a broad clinical aspect. He defines the blood picture of each of the disorders and chronologically reviews the findings from the earliest scientific knowledge to the latest developments and concepts.

The first ten chapters are devoted to the anemias and changes in the erythropoietic system. The discussion of the anemias begins with the simple chronic types, presenting related causes and treatments. In turn, follow descriptions of the iron deficiency anemias, anemias of pregnancy, hemolytic anemias, with 122 pages devoted to pernicious anemia and other macrocytic anemias.

Two chapters cover the hemorrhage state due to changes in the normal clotting elements of the blood and deficiencies in platelets. Great emphasis is placed on the role played by vitamin K and prothrombin in this respect. Also presented here is a classification of

the hemorrhagic states.

In the portion of the book devoted to changes in leukocytes, the author describes in detail the various types of cells and discusses the sources of error found in counting and identifying them.

Along with the description of the leukemias and abnormalities of the granulocytes, there are several colored plates demonstrating the typical abnormal cells.

Lipidoses are described in a short chapter reviewing three diseases typical of this condition. The bone marrow picture in normal conditions and blood dyscrasias is presented, showing characteristic changes for varying conditions.

The final section of the book covers the most recent concepts of blood substitutes and blood transfusions.

The material is simply presented in an interesting manner with an adequate number of charts, graphs, and diagrams and well supplied with references.

M. F.

## ► DISEASES OF THE ADRENALS - - -

*By Louis J. Soffer, M.D., Assistant Clinical Professor of Medicine, College of Physicians and Surgeons, Columbia University; Associate Attending Physician, The Mount Sinai Hospital, New York City. 2nd Edition, 320 pages, 45 illustrations, 3 color plates. 1948, Lea & Febiger, Philadelphia. Price \$6.50.*

Written in a crisp factual style, this three hundred page text gives one a vivid story of the structure and behavior of the adrenal gland in both health and disease. One section is devoted to the fundamentals of the chemical and mechanical tests which are so essential in studying and diagnosing adrenal diseases. Determinations of sodium, potassium, and chlorides in the serum and urine are described in detail. Procedures for doing biologic assays, salt tolerance test, water tolerance test, perirenal insufflation, and others are clearly defined.

Lengthy consideration is given to adrenal physiology, which is so important in understanding the various related disease entities. The relationship to blood electrolytes, to other endocrine glands, and to their hormones is explained in full.

The author classifies adrenal disease essentially as follows: (1) Destructive lesions of the adrenals, such as tuberculosis, atrophy, hemorrhage, etc., i.e., those conditions causing a clinical picture of Addison's disease; (2) tumors of the adrenal medulla and sympathetic ganglia; (3) tumors of the adrenal cortex, and (4) hyperplasia of the adrenal cortex. The endocrinologic significance of each of the disease entities is discussed in detail and a great deal of attention is given to the management and therapy of each.

Many excellent case histories and illustrations, including photomicrographic section, radiologic and photographs of patients are interspersed throughout this edition.

# EDITORIALS

## SENSITIVITY TO CHEMOTHERAPEUTIC AND ANTIBIOTIC AGENTS

SINCE the advent of the many new chemotherapeutic and antibiotic agents, the problem of allergic manifestations and sensitivity reactions has been considerably intensified. In a recent report, Dr. William B. Sherman, New York, stated that the sensitivity reactions which occur in only occasional patients are distinct from the usual toxic actions of the drugs, although in some instances present knowledge of the mechanism does not permit one to distinguish between allergic and toxic reactions with certainty.

Among the common reactions to drugs are symptoms of asthma and rhinitis which most often affect persons who suffer the same symptoms from other causes. Aspirin tends to cause these symptoms most frequently, but other occasional causative agents are the sulfonamides, penicillin, quinine, arsphenamine, vegetable gums and protein drugs such as pancreatin and papain.

According to Dr. Sherman, attacks of asthma caused by aspirin usually start within a few minutes of administration of the drug, because of its solubility and diffusibility, so that the relationship of cause and effect is quite readily apparent.

Fever, which is an important and confusing manifestation of drug allergy, is seen most frequently after administration of the sulfonamides, but is also caused by penicillin, streptomycin, thiouracil, iodides, and other drugs. Dr. Sherman observes that the temperature may rise to 105 or 106° F. and the leukocyte

count may remain normal or rise as high as 30,000. The fever is often, but not always, accompanied by a rash and may easily be mistaken for one of the acute infectious diseases.

If it is recognized that the fever is due to a sensitization reaction, and subsides promptly when the causative agent is removed, it is rarely serious. On the other hand, in certain instances where fever from sulfonamide sensitization has been confused with a recurrence of infection and the causative drug continued, death has resulted from drug allergy.

Many types of skin eruptions, of which the commonest are urticaria, dermatitis medicamentosa and contact dermatitis, may result from drug allergy.

A variety of drugs cause jaundice, and with certain agents, such as chloroform and carbon tetrachloride, liver damage appears to be a normal toxic effect of the drug. Other drugs, such as the sulfonamides, arsphenamine, cinchophen and atabrine, tend to cause jaundice as a result of sensitization.

In addition to these more common symptoms of drug allergy, other reactions may occur including unusual types of skin eruptions, involvement of joints, and leukocytosis. Hepatitis, thrombocytopenic purpura, and agranulocytosis due to drugs may also be allergic symptoms. Such histologic lesions as arteritis, focal necrosis, and granuloma formation may also result from drug sensitization.

Scratch and intracutaneous tests are of value in detecting allergy to protein drugs, but are rarely of value and may produce dangerous general reactions in cases of sensitization to non-protein compounds. Patch tests are fre-

quently of value in dermatitis due to drug allergy. Although desensitization is of value in reaction to protein drugs, its efficacy in sensitization to non-protein drugs is rather questionable.

W. B. S.

## CHRONIC CORONARY DISEASE

**T**O MAKE the patient live longer, and to offer him a "friendly life," should constitute the primary objectives in the management, treatment, and therapy of chronic coronary insufficiency. That these objectives are mutually complementary, was stressed in a recent discussion of the problem by Dr. Robert S. Berghoff.

For the most part, chronic coronary disease is a result of arteriosclerosis, and might, in fact, be termed chronic arteriosclerotic coronary disease. Before making this diagnosis, however, it is necessary first to rule out the possibility of the condition being of syphilitic origin. However, syphilitic heart disease is rapidly disappearing.

Although the disease, which is generally progressive, may occur at any age, it usually affects the patient at approximately the halfway point of his life. In many patients, the symptom complex begins as angina of effort, followed by acute occlusion with infarction, and finally chronic coronary insufficiency.

In order to achieve the principal objective of prolonging the patient's life, it is necessary to evaluate each individual's energy potential in terms of his physical, mental, and emotional capacities.

It is, of course, necessary for the physician to assist the patient in making whatever readjustments are required of him and to help him plan a revised way of life. Depending on the amount and type of insufficiency present, some change in the patient's occupation may be involved. His work may have to be of a more sedentary nature, and if the previous employment has required much physical effort, this

will obviously have to be eliminated. Almost as important as the expenditure of physical effort is that of mental energy. The patient must channel his mental "expenditures," so as to keep them within his mental output potential—in other words, he must stop short of pain, distress, and fatigue.

As a corollary to avoiding all mental strain, the patient must also learn to control his emotional reactions. He must develop a sense of lethargy toward relatively unimportant factors—to avoid or minimize situations leading to emotional disturbances.

In the matter of personal habits, Dr. Berghoff believes that the wisest course to follow is not to compel the patient to institute drastic changes. For example, if a patient has been accustomed to the *moderate* use of tobacco and alcohol, he will probably not be further harmed by their continued use, although some reduction in consumption may be indicated. In many instances, it has, in fact, been found that allowing the patient to live "normally" as much as is consistent with his individual condition, has had beneficial effects rather than otherwise. Whether this procedure can be followed is, of course, a matter which must be determined for each patient individually.

Unless the patient is nephritic, diabetic, or obese, no stringent dietary measures need be introduced. The most important factor in regulating the diet is the quantity of food consumed—the quality of the food is not so vital so long as the diet is well balanced. Overloading the stomach must be avoided and particularly before retiring.

In addition to observing these principles, the patient must devote ample time to complete relaxation and sleep. A minimum of ten hours of rest at night, and an hour in the afternoon is advised.

One factor in many patients' pattern of living which Dr. Berghoff feels has too often been neglected, but which is extremely important, is the continuance of sexual intercourse. Here again, it is difficult to generalize; what to tell the patient must be decided on the basis of the individual case situation. Sexual intercourse

naturally offers a hazard since it induces an emotional peak. The patient himself must judge whether he is too fatigued by the experience—if that “normal act” causes progressively increasing symptoms of dyspnea, then it is dangerous and should be discontinued.

Along with a carefully planned program of living, some consideration should also be given to the use of therapeutic agents when necessary. For sedative purposes, therapy may comprise  $\frac{1}{4}$  grain of phenobarbital four times a day. If such coronary dilators as aminophylline, papaverine, or theobromine are used, the dosage should be about 3 grains a day, orally. Nitroglycerin may be used to control pain, and also for treatment of hypertensive patients.

Although there are no positive indications that the administration of vitamins is of direct

benefit in the treatment of chronic coronary insufficiency, they do indirectly boost the patient's vitality—particularly thiamine chloride.

If frank heart muscle decompensation is present, especially of the right heart, digitalis, in a small dose over a long period of time, is of value. The drug is not very effective for left heart muscle decompensation.

By following such a comprehensive program of management, treatment and therapy, the average patient suffering from chronic coronary insufficiency can maintain a comparatively normal and useful life—always remembering that “moderation” is his norm and the underlying precept of the physician's directives. In addition to a normal and useful life, such a patient with chronic coronary insufficiency will find life friendly and worth while.

A. E.

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# William Worrall Mayo

## *"I Started All This"*

J. L. BURN\*

CITY OF SALFORD, LANCS., ENGLAND

I LIVE and work in the birthplace of William Worrall Mayo who is so rightly revered as a pioneer in the great days of the nineteenth century. American readers will well remember the colorful events of his life; how, as a physician in Minnesota, he carried out his duties against the primitive background of covered wagons, and how he helped to check the advance of the Sioux Indians during the Minnesota Massacres of 1862, whilst his wife was organizing a stage army of women to make a display of force.

One hundred and three years ago he impulsively emigrated to America. Before his death in 1911, he had seen his sons, William and Charles, rise to medical eminence and international fame in the very village in which the father practiced. His sense of humor is seen in the reply he was wont to give to those who made reference to the brilliance of his sons. "Why don't you congratulate me? I started all this!" was his dry reply.

The official biography "*The Doctors Mayo*"<sup>1</sup> gives Eccles, Lancashire, as his birthplace, but I am proud to claim the adjoining City of Salford for this honor. The mistake probably has arisen in that the house in which he was born was situated in the *ecclesiastical parish* of Eccles, to the Parish Church of which he was taken for baptism. Ecclesiastical and local government boundaries frequently differed. It may seem of little moment to some readers as to where precisely he was born; but to us in the City of Salford it is important. He was certainly born in Salford; the entry in the ecclesiastical register says so. For the first time, it is reproduced here.

Another interesting fact which the entry in the ecclesiastical register brings to light for the first time, is that William Worrall Mayo's father, James Mayo, was a joiner. "*The Doctors Mayo*," Bibliographical Notes, p. 722, records that "Mrs. Berkman (to Richard O. Beard) said she thought that James Mayo had been a farmer, but according to William J. Mayo (story to Mrs. Mellish), he followed the sea as a ship's captain." The register entry is of interest, therefore, in revealing

that, at the time the entry was made, William Worrall's father was a joiner.

William Worrall may well have acquired his manual dexterity from his father, who would be a craftsman accustomed to manipulations. There is, therefore, a link between craftsmanship of father and son—one a joiner and the other a surgeon to whom, in the days before the use of anesthetics became general, manual dexterity would be of great importance.

There is a curiously long interval between his birth (May 31st) and his baptism (October 24th). It was then the general custom to have babies christened within a month after birth. The reason for the deviation from custom is unknown; it could not have been that he was very delicate at birth for christening would have taken place then, as now, immediately.

Another point of interest in the ecclesiastical register entry is the way in which his mother's name is spelled. In the register it is spelled "Anne"; in the official biography "*The Doctors Mayo*" it is spelled "Ann."

There is no certainty as to where William Worrall was born. Two houses are possibilities. There are traces of a family of Mayos, in good social circumstances, having resided at New Barns, a part of Salford (although previously in the ecclesiastical parish of Eccles). The house would have been demolished when the Manchester Ship Canal was made, over fifty years ago. There were many Mayos and an old calendar of 1831 lists twelve families of the name of Mayo living in different parts of the town.

Buried in Eccles churchyard are several Mayos who lived at the end of the eighteenth and beginning of the nineteenth century. One, James Mayo, said to be of Ardwick (a district of Manchester) and his wife Anne Mayo (the same names as the father and mother of William Worrall) died in 1822 and 1839 respectively; but it is not likely that they were the parents of William Worrall. I believe the birthplace of William Worrall to be near Oldfield Road, Salford. On a visit to the house I found it to be infested with bugs! I hastily got it disinfected in case of any visitors!

Atkinson, "*Biographical Dictionary*," p. 602, states

\*Medical Officer of Health, Public Health Department, Municipal Offices, City of Salford, Lancs., England.



WILLIAM WORRALL  
MAYO

that the Mayo family had lived for generations at "New Barns," but for William's birthplace gives only "near Manchester." Mrs. Berkman, who copied the birth record from the flyleaf of the prayer book given her by a cousin when she was visiting in Eccles in 1929, wrote (letter to Richard O. Beard, July 1, 1935, Press file) that James Mayo lived at Old Barns but that William Worrall Mayo was born at "Old Field's Road," Salford.

In the prayer book she found also a slip of paper bearing the words: "Feb. 6th 1785. Baptized Ann, daughter of John and Tenneson Bonselle. H. C. Smith, curate of Monyark."

Near the Mayo cottage lived Edmund Taylor (of

great local fame) who was a pioneer of surgery and bonesetting, and it is tempting to think that William Worrall Mayo's choice of work, and the eminence of the next generation of Mayos in it, owe something to the influence of Dr. Taylor.

#### THE MAYO MEMORIAL WINDOW

I am glad to be able to report on the excellent condition of the stained glass window erected in Eccles Parish Church in 1929 when the Mayo brothers visited this church. (Incidentally, their visit to England together was of interest in that it was the first occasion upon which they had both been away from the Clinic; previ-

# Consultation Service

This special consultation information service is offered as a regular monthly feature of *Postgraduate Medicine*. Readers are invited to call on this Service for answers to difficult medical problems from members of our Editorial Board best qualified to help. Each question will be answered by mail and those of general interest will be published each month. Address all communications to Consultation Service, *Postgraduate Medicine*, 516 Essex Building, Minneapolis 3, Minnesota.

## PERNICIOUS ANEMIA OF PREGNANCY

**QUESTION:** I have a patient, five months pregnant, who has pernicious anemia of pregnancy. She fails to respond to parenteral injections of liver extract. What do you advise?

M.D.—California

**ANSWER:** The first and most essential point to establish is that the patient actually has pernicious anemia complicated by pregnancy. This may be the so-called pernicious anemia of pregnancy which resembles true pernicious anemia, is probably due to dietetic deficiencies, and tends to recover almost spontaneously with the ending of pregnancy, without sequelae.

The December 1948 issue of *Obstetrical and Gynecological Survey* (pp. 792-795) has a worthwhile discussion of etiology, diagnosis, and treatment based on two papers, one by L. S. P. Davidson and colleagues, the other by M. Gillespie and a coworker, both from a recent issue of the *British Medical Journal*.

It is agreed that patients who do not respond to parenteral liver therapy will do so to oral administration of proteolized or of cooked liver.

Folic acid seems to be the best agent available at present for treatment of pernicious anemia of pregnancy. Its action is rapid and definite, improvement in the blood picture and in clinical symptoms usually following promptly.

PAUL TITUS

## RINGWORM INFECTION

**QUESTION:** What treatment can be used for ringworm infection of the feet and scalp where the patient must go to work daily?

M.D.—Washington

**ANSWER:** Work is not a contraindication to treatment of either ringworm of the feet or scalp. The newer remedies for ringworm of the feet, as undecylenic, propionic, and caprylic acids, compounded in salves, liquids, or powders, are not irritants and have a very low sensitizing index. These are moderately effective in ringworm of the feet caused by either *Trichophyton gypseum* or *Epidermophyton inguinale*. However, the less inflammatory and more recalcitrant infections, caused by *Trichophyton purpureum*, are resistant to almost all therapy including strong keratolytic agents, chrysarobin, etc.

Ringworm of the scalp when caused by fungi of animal origin, as *Microsporum lanosum* and *Trichophyton gypseum*, respond to local therapy. Among the best of

the newer remedies are 5 per cent salicylanilide in carbowax 1500 and 5 to 10 per cent copper undecylenate in the same base.

Ringworm of the scalp when caused by *Microsporum audouinii*, *Trichophyton violaceum*, *Trichophyton sulphureum*, etc., are extremely resistant to local therapy and are best treated by epilation with x-ray. A limited number of ringworm infections of the scalp caused by the latter group of organisms have been cured by persistent local therapy and manual epilation.

BEDFORD SHELMIER

## PENICILLIN FOR RHEUMATIC FEVER

**QUESTION:** Has penicillin proved effective in treating acute rheumatic fever? If so, what dosages are recommended? Are there any deleterious effects from its use?

M.D.—Minnesota

**ANSWER:** Penicillin in my experience and in the experience of most physicians who treat rheumatic fever has no curative or beneficial effect on the disease. There are no deleterious effects from the use of the drug in this disease other than those which might occur from its use in any other disease, such as allergic phenomena, etc.

JAMES E. PAULLIN

## ULCERATIVE COLITIS

**QUESTION:** Will you please send me some information on the therapy of nonspecific ulcerative colitis, and in particular, anything you might have concerning the use of desiccated hog stomach in this disease along with dosage advisable.

M.D.—Wisconsin

**ANSWER:** The most important detail to be established before a patient who has ulcerative colitis is treated is a determination of the cause of the condition, or if this is not possible, at least classification of it. A great variety of therapeutic measures have been employed in the treatment of the various forms of ulcerative colitis.

The diet should be high in proteins, vitamins, and calories, and low in residue. Among the sulfonamides which have been proved to be of value are sulfaguanidine, sulfasuxidine, sulfathaladine, and neoprontosil. For the very sick patient, penicillin in large amounts has been particularly helpful. The transfusion of blood commonly is required.

"Desiccated hog stomach," which has been considerably discussed lately, has very doubtful value.

## DIFFERENTIAL DIAGNOSIS OF ACUTE APPENDICITIS AND RENAL COLIC

**QUESTION:** What symptoms and signs will aid in the differential diagnosis of acute appendicitis and renal colic?  
M.D.—North Dakota

**ANSWER:** The most characteristic story of acute appendicitis begins as a feeling of heaviness or weight in the epigastrium or umbilical area followed by generalized discomfort which becomes localized in the right lower quadrant. It is usually followed by nausea and at times vomiting on one or two occasions.

Right sided renal colic rarely has this diffuse character but may be localized to the right lower quadrant. Usually, the pain begins in the back and radiates down through the right side, many times going into the groin. Nausea may occur but rarely vomiting.

The point of greatest value in differentiating the two conditions is demonstrating point tenderness. With appendicitis, this is usually found in the classical position, irrespective of the position of the appendix and can be demonstrated at McBurney's point. With a pelvic appendix, point tenderness may be demonstrated on the right side by vaginal or rectal examination. The presence or absence of fever, or elevation of the leukocyte count will be of little help in differentiating the two conditions.

Usually in the presence of renal colic, examination of the urinary sediment will show occasional red blood cells and a few pus cells. A flat plate of the abdomen in doubtful cases may occasionally reveal a shadow along the course of the ureter. The examination of patients in the hospital gives an opportunity for cystoscopic examination, when the differential diagnosis is unusually difficult.

RICHARD B. CATTELL

## BELL'S PALSY

**QUESTION:** I would appreciate information relative to therapy for Bell's palsy with comments on the use of "Aureomycin," and superficial x-ray especially. If etiology is a suspected virus infection, what incubation period might one expect, and what (other) proved etiologic agents are implicated?

M.D.—Windsor, Ontario

**ANSWER:** Bell's palsy, in the broadest sense, refers to paralysis of the muscles supplied by the seventh cranial nerve by a pathologic process affecting the nerve itself. The seventh cranial nerve is particularly susceptible because of its long course within a bony canal. Other nerves may become edematous without significant dysfunction developing; the seventh cannot to more than a slight degree without interruption of its function as a result of pressure.

The commonest cause of Bell's palsy seems to be in response to exposure of the side of the head to cold air, so-called refrigeration palsy. Inflammations of the nerve, such as may occur in otitis media, Guillain-Barré's

syndrome, sarcoidosis, meningo-encephalitis, and Hunt's syndrome (herpes zoster oticus) are more common than tumors of the nerve. Of course, fracture through the petrous portion of the temporal bone and direct injury during mastoid surgery are not uncommon causes of peripheral facial paralysis.

Thus, it is seen that virus infection is probably an uncommon cause of Bell's palsy. The treatment varies as the etiology varies. Fortunately, in the commonest types resulting from refrigeration, recovery is the rule in a few weeks. In the more severe cases where degeneration of the nerve takes place, regeneration results in fairly satisfactory recovery after six months. In such cases massage and galvanic stimulation of the paralyzed muscles is the treatment of choice. If regeneration does not occur an anastomosis between the spinal accessory and the facial nerve or one of the plastic operations to correct deformity is indicated.

"There is no experimental or clinical evidence to date to indicate that aureomycin is of any value in the treatment of this condition."

## TREATMENT OF PNEUMONIA IN CHILDREN

**QUESTION:** In what form and dosage should penicillin be given in treating lobar and bronchopneumonia in children?

M.D.—Kansas

**ANSWER:** We prefer aqueous penicillin G given in doses of 100,000 units every eight hours or every twelve hours by the intramuscular route.

## TREATMENT OF SPASMODIC CROUP

**QUESTION:** By what means can spasmodic croup in children under 6 years be relieved most promptly? Has adrenalin been used effectively? In what dosage?

M.D.—Wyoming

**ANSWER:** Increasing the humidity of the room of the child with spasmodic croup is the best immediate way to relieve the distress. The addition of sedatives, such as phenobarbital, is also indicated. Adrenalin has been used, and is said to be effective in doses of 2 to 3 minims.

## TWITCHING EYELID

**QUESTION:** What physical conditions should be looked for in a case of twitching eyelid when all examinations of the eye prove negative?

M.D.—Michigan

**ANSWER:** A twitching eyelid is never a sign of a purely ocular condition. It is evidence of general fatigue, toxemia, or a focus of infection some place. An infected tooth is often to blame. Garage workers who inhale small amounts of carbon monoxide often show this symptom. It has also been observed following, on occasion, encephalitis lethargica. In some rare instances it is evidence of a psychiatric disturbance.

DERRICK VAIL

# New Drugs and Instruments

Information published in this department has been supplied by the manufacturers of the products described.

## VEAL BONE ASH TABLETS

**PURPOSE:** To supply calcium and phosphorus derived from a natural source.

**COMPOSITION:** Each tablet contains 0.27 gm. of veal bone ash and supplies 0.1 gm. of calcium and 0.05 gm. of phosphorus.

**INDICATIONS FOR USE:** For supplementation of diets deficient in calcium and phosphorus; for supplying added calcium and phosphorus during pregnancy and lactation; and for various disease states where the need for an increased calcium and phosphorus intake exists.

**DOSAGE AND ADMINISTRATION:** Usual dosage for supplementation of the adult diet deficient in calcium and phosphorus is 5 to 10 tablets daily. Suggested dosage for the latter half of pregnancy and for lactation is 10 to 15 tablets daily. The dosage for patients with various disease states depends upon the condition in question and should be determined by the physician in accordance with the clinical needs.

**HOW SUPPLIED:** Mead's Veal Bone Ash Tablets are supplied in bottles of 250 tablets.

**PRODUCER:** Mead Johnson & Company, Evansville 21, Ind.

## LAURIUM

**PURPOSE:** Oral hematinic.

**COMPOSITION:** Each capsule contains: 280 mg. ferrous gluconate; 200 mg. liver concentrate, derived from 4 gm. fresh mammalian liver; 1 mg. folic acid; 2 mg. thiamine hydrochloride; 1 mg. riboflavin; 10 mg. niacinamide; and 15 mg. ascorbic acid.

**INDICATIONS FOR USE:** Prophylaxis and therapy of nutritional, hypochromic and secondary anemias; adjunctive therapy in macrocytic anemias; and in avitaminoses of the B complex and ascorbic acid often accompanying anemias. Not intended for treatment of pernicious anemia.

**DOSAGE AND ADMINISTRATION:** Administration with meals suggested. Dietary supplement—1 or 2 capsules daily. Hypochromic anemia—1 or 2 capsules three times daily or as physician directs.

**HOW SUPPLIED:** Bottles of 100 capsules.

**PRODUCER:** Whittier Laboratories, Division Nutrition Research Laboratories, Chicago 30, Ill.

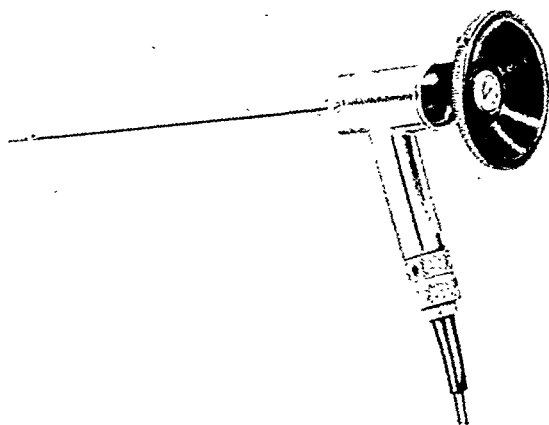
## OXYCEL FOLEY CONES

**DESCRIPTION:** Absorbable, hemostatic, oxidized cellulose in gauze form, in four-ply discs, folded into cones.

**INDICATIONS FOR USE:** Designed for use in conjunction with the Foley hemostatic bag catheter in suprapubic or retro-pubic prostatectomy. They assume a conical shape readily adaptable to placement in the prostatic fossa. May be left in the body cavity following operation without irritation or impairment of healing processes.

**HOW SUPPLIED:** In 5 inch and 7 inch diameters, each in individual glass containers.

**PRODUCER:** Parke, Davis & Company, Detroit 32, Mich.



## NASOPHARYNGOSCOPE

**PURPOSE:** Visual inspection of eustachian orifices, the nasal floor, mucous membranes, blood vessels, posterior portions of the turbinates, and posterior pharyngeal wall.

**DESCRIPTION:** An illuminated endoscopic instrument 11 Fr. incorporating a freely rotatable lens system with right angle, highly magnified field. All optical elements have antireflection coatings. Cartridge type lamp, without screw threads avoids need for alignment of lamp with objective lens. Lamp is encased in an unbreakable transparent capsule which presents a cool surface to mucous membranes. Supplied with flashlight cell battery handle or with switch cord for operation on standard low voltage controllers.

**PRODUCER:** National Electric Instrument Co., Inc., Elmhurst, L. I., N. Y.

## AD-VITUM DROPS

**PURPOSE:** Water soluble, liquid vitamin preparation.

**COMPOSITION:** Ad-Vitum Drops contain distilled vitamin A ester, viosterol in oil, sorbitan fatty acid ester derivative, vegetable oil, and glycerin in a flavored aqueous vehicle. Each cc. contains:

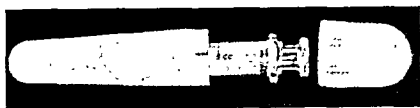
Vitamin A .....	30,000 U.S.P. units
Vitamin D .....	5,000 U.S.P. units

**INDICATIONS FOR USE:** Periods of active growth, development or repair of tissues, in chronic gastrointestinal disorders, restricted therapeutic diets, and conditions with increased metabolism.

**DOSAGE AND ADMINISTRATION:** Infants and children under 12: 3 to 5 drops. Adults and children over 12: 4 to 6 drops. Larger doses may be adjusted to individual requirements. Ad-Vitum Drops may be added to milk, fruit juices, or infants' formulas or dropped directly on the tongue.

**HOW SUPPLIED:** In bottles of 30 cc.

**PRODUCER:** International Vitamin Division, Ives-Cameron Company, Inc., New York 16, N. Y.



### NYLON SYRINGE CASES

**DESCRIPTION:** Fountain-pen-shaped cases for hypodermic syringes. The larger case holds the 5 cc. syringe, the smaller case holds any hypodermic needle up to 2 inches in length. The syringe and needles can be sterilized, or even autoclaved, right in the cases by merely loosening the cap, thus exposing a slot which admits the steam.

**PRODUCER:** The Menda Co., Pasadena, Calif.

### PABALATE

**PURPOSE:** Antirheumatic.

**COMPOSITION:** Each Pabalate tablet, coated to prevent gastric irritation, contains:

Sodium salicylate, U.S.P. (5 gr.)	0.3 gm.
Para-aminobenzoic acid (5 gr.)	0.3 gm.
(as the sodium salt, N.N.R.)	

**DESCRIPTION:** Pabalate furnishes two active antirheumatic agents which act synergistically to result in higher and adequate salicylate titer and with a proportionate reduction in risk of salicylism (since lower salicylate dosage is possible).

**DOSEAGE AND ADMINISTRATION:** Rheumatoid arthritis—During acute exacerbations or when the severity of the pain indicates bed rest, 2 Pabalate tablets three or more times a day are indicated. At other times the patient can adjust the dosage to his needs. Acute rheumatic fever—The adult dosage should be 2 Pabalate tablets six to eight times a day until definite improvement is noted, after which the dosage can be reduced somewhat, e.g., 2 tablets three or four times a day. This schedule should be continued without interruption until all signs of active infection have been absent for seven to ten days.

**HOW SUPPLIED:** In bottles of 100 tablets.

**PRODUCER:** A. H. Robins Co., Inc., Richmond, Va.

### DIAZOLINE TABLETS, GROOVED DIAZOLINE DULCET TABLETS

**PURPOSE:** Compound of sulfadiazine and sulfathiazole.

**COMPOSITION:** Diazoline Tablets, Grooved, contain 0.25 gm. sulfadiazine and 0.25 gm. sulfathiazole. Diazoline Dulcet Tablets, yellow and fruit-flavored, contain 0.15 gm. sulfadiazine and 0.15 gm. sulfathiazole in a medicated candy dosage form.

**INDICATIONS FOR USE:** May be administered orally in the treatment of any case of acute bacterial infection in which either sulfadiazine or sulfathiazole is specifically indicated, with the exception of meningitis.

**CAUTIONS:** Diazoline is contraindicated in cases of infections caused by organisms that are not susceptible to sulfathiazole or sulfadiazine. Diazoline Tablets should be carefully administered, observing the same precautions that are recommended for the use of sulfonamide drugs in any other form.

**DOSEAGE AND ADMINISTRATION:** Recommended dosage is equivalent to that of either drug when given alone. In adults an adequate sulfonamide concentration in the

blood may be achieved by an initial dose of 4 to 6 gm. and maintained by further doses of 1 gm. every four hours, using either the Tablet or the Dulcet Tablet.

**HOW SUPPLIED:** Diazoline Tablets, Grooved, are supplied in bottles of 100 and 1,000. Diazoline Dulcet Tablets are supplied in bottles of 100.

**PRODUCER:** Abbott Laboratories, North Chicago, Ill.

### CHOLIMETH

**PURPOSE:** A lipotropic agent for the treatment of liver disorders.

**COMPOSITION:** Each tablet contains:

Choline dihydrogen citrate	0.350 gm.
d, l-methionine	0.167 gm.

**INDICATIONS FOR USE:** Hepatic damage whether of dietary or toxic origin. Cirrhosis of the liver, liver dysfunction where fatty degeneration is threatened. Toxic hepatitis resulting from drug or industrial substances. Icterus gravis neonatorum. Dermatologic disorders associated with choline deficiency.

**DOSEAGE AND ADMINISTRATION:** Average recommended dose is 2 gm. daily of choline and methionine (12 tablets of Cholimeth per day in divided doses). Dosage as high as 3 or 4 times the average dosage has been used in many cases.

**HOW SUPPLIED:** Uncoated tablets, bottles of 100, 500, and 1,000.

**PRODUCER:** The Central Pharmacal Company, Seymour, Ind.

### TRACTACLIP\*

**PURPOSE:** Wound approximator designed to exert gentle continuous traction on the edges of skin wounds. Formerly known as the Constant Traction Dressing.

**DESCRIPTION:** Traction is supplied by a sheet of latex connecting two metal members which grip the skin by means of fine-toothed edges.

**INDICATIONS FOR USE:** Most applicable to relatively flat surfaces where the skin is not loose or redundant. Useful in treatment of industrial injury, emergency surgery, and in plastic surgery of the face and head where indicated.

**HOW SUPPLIED:** Tractaclip is sterilized and packed individually. Available in three sizes: No. 95— $\frac{1}{4}$  inch spread, 1 inch wide; No. 96— $\frac{1}{2}$  inch spread, 1 inch wide; and No. 97— $\frac{3}{4}$  inch spread,  $\frac{1}{2}$  inch wide.

**PRODUCER:** Davis & Geck, Inc., Brooklyn 1, N. Y.

\*Registered Trade Mark.

### GRAMODERM

**PURPOSE:** Antibiotic skin ointment.

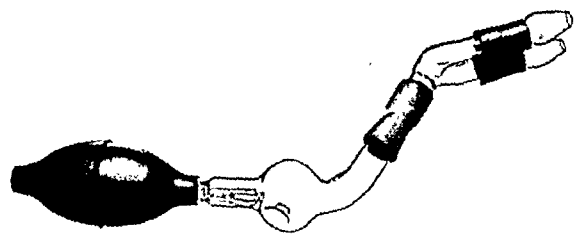
**COMPOSITION:** Each gram of Gramoderm contains 0.25 mg. of gramicidin.

**INDICATIONS FOR USE:** Treatment of skin infections due to gram-positive organisms, such as impetigo, eczematoides, impetigo contagiosa, ecthyma, and infected superficial wounds caused by susceptible organisms.

**DOSEAGE AND ADMINISTRATION:** Gramoderm is liberally applied to the infected areas and covered with an occlusive dressing. The dressing is renewed every twelve hours.

**HOW SUPPLIED:** Collapsible tubes containing 20 gm.

**PRODUCER:** Schering Corporation, Bloomfield, N. J.



### PEN-I-MIST HAND BULB NEBULIZER

**PURPOSE:** Penicillin aerosol treatments.

**DESCRIPTION:** Utilizes soluble tablets of crystalline penicillin or standard crystalline salt. Tablet is dropped into nebulizer and diluent is added, usually about 8 drops of water or saline. When vials are used, standard syringe procedure or penicillin solution is used. Complete instructions are enclosed with each Pen-i-mist.

**PRODUCER:** Oxygen Therapy Sales Co., Los Angeles 27, Calif.

### VI-SYNERAL INJECTABLE

**PURPOSE:** Treatment of vitamin deficiencies.

**COMPOSITION:** Each 2 cc. of Vi-Syneral Injectable contains, in aqueous solution:

Vitamin A	10,000 U.S.P. units
Vitamin D (calciferol)	1,000 U.S.P. units
Thiamine HCl (B <sub>1</sub> )	10 mg.
Riboflavin (B <sub>2</sub> )	1 mg.
Pyridoxine HCl (B <sub>6</sub> )	3 mg.
Niacinamide	20 mg.
Ascorbic acid (C)	50 mg.
Alpha Tocopherol (E)	2 mg.

**INDICATIONS FOR USE:** For prevention and treatment of vitamin deficiencies in all conditions in which gastrointestinal digestion, absorption, or utilization is impaired; patients unable to take vitamins or food by mouth; patients so acutely deficient that delay of intestinal absorption must be prevented; patients critically ill with nutritive failure. Such conditions include diarrhea, sprue, colitis, intestinal fistula, obstructive intestinal lesions; following intestinal resection.

**ADMINISTRATION:** The contents of one ampule (2 cc.) is administered intramuscularly on alternate days or more frequently as necessary. Inject *slowly* in the gluteal muscle or deep in the outer aspect of the thigh, changing the site for each injection.

**HOW SUPPLIED:** 2 cc. ampules, boxes of 6, 25, 100, and 500.

**PRODUCER:** U.S. Vitamin Corporation, New York 17, N. Y.

### LOZILLES

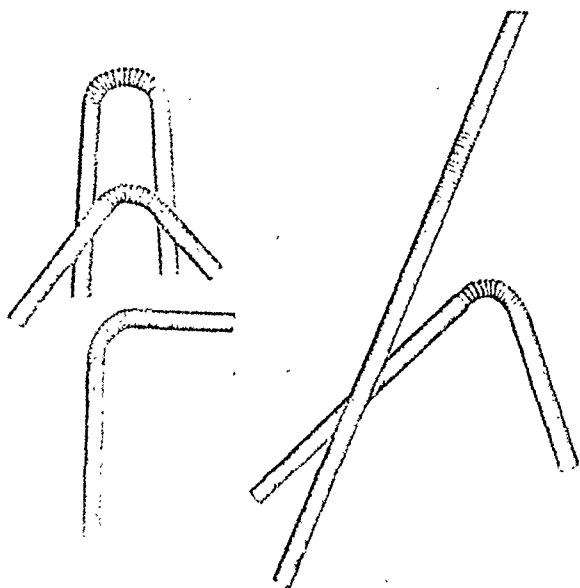
**PURPOSE:** Antibiotic, analgesic throat lozenge.

**COMPOSITION:** Each Lozille provides 2 mg. of thyrothricin and 2 mg. of propesin.

**INDICATIONS FOR USE:** In treatment of common infections of mouth and throat, for relief of sore throat and prevention of secondary infection during the common cold, and relief of pain and reduction of oral bacterial flora following oral surgery.

**HOW SUPPLIED:** In vials of 15 tablets.

**PRODUCER:** White Laboratories, Inc., Newark 7, N. J.



### FLEX-STRAW

**DESCRIPTION:** Disposable drinking tube, specially treated for use in hot as well as cold liquids. The crimped section near the top allows the straw to flex and bend to any drinking angle.

**PRODUCER:** The Flex-Straw Corporation, Cleveland 3, Ohio.

### PYRIBENZAMINE EXPECTORANT WITH EPHEDRINE

**COMPOSITION:** A mixture containing per 4 cc. 30 mg. pyribenzamine citrate, 10 mg. ephedrine sulphate, and 80 mg. ammonium chloride.

**INDICATIONS FOR USE:** In persistent unproductive cough accompanying bronchitis due to or associated with allergy; in asthma, and in cases of upper respiratory infection associated with allergy.

**DOSAGE AND ADMINISTRATION:** Orally, one or two teaspoonfuls every three to four hours. A full glass of water should be taken with each dose.

**HOW SUPPLIED:** Bottles of 1 pint and 1 gallon.

**PRODUCER:** Ciba Pharmaceutical Products, Inc., Summit, N. J.

### BREONEX-L (SOLUBLE)

**PURPOSE:** A potent stable powder containing the principal B complex factors.

**DESCRIPTION:** Instantly soluble, the restored solution may be used parenterally in whatever dosage the physician may choose. It can be stored indefinitely in a dry state without refrigeration. It is stable in solution for at least two weeks, and its special double salt permits heavy grainage of riboflavin.

**HOW SUPPLIED:** In rubber-capped vials, with a 10-cc. vial of aqueous diluent.

**PRODUCER:** George A. Breon and Company, Kansas City, Mo.

# Leaves from a Doctor's Diary

By MAURICE CHIDECKEL

March 2 . . . I don't know which was of more absorbing interest, the discussion around a table by well known otologists about the intravenous administration of histamine in sudden nerve deafness, or the waiters and the customers in that crowded, odd-looking, exotic eating place, situated in the woods, where they spoke a language I did not understand.

"Ordinarily," said Professor D., "such cases would be classed as labyrinthine apoplexies, caused by hemorrhage into the labyrinth, or because of edema in the cochlear portion of the labyrinth. . . ."

Dr. Gilford interrupted: "I think it is due to thrombosis of the auditory nerve pressure being exerted on the organ of Corti. . . ."

Somehow I didn't care to hear shop talk any longer for today. For the study of psychology—I mean



abnormal—the customers and the waiters were more amusing and far more interesting. I watched the men as they ran in, gobbled up the food and ran out to earn money for more food. An old man ate his soup and it sounded like a loud saxophone. He put the spoon away, and began to empty the contents from the plate. Suddenly he arose and angrily thumped his fist on the little table. . . .

"I see your redheaded waitress is here no longer. The hair in the soup today is black." "Quick, a turkey sandwich," came from a

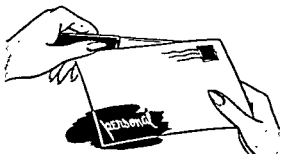
young man with a fancy vest. The waiter looked typically Russian. "Have no turkey," he informed the customer. "Then give me a chicken sandwich," came the order. The waiter grinned. "Foolish man," he said. "If I had chicken, wouldn't I give you turkey?" A man drank a cup of coffee, put down a two dollar bill. The waiter came back with his hands behind him. "Mister," he said, "there is \$1.95 change. Do you want it?"

*I love to watch people in crowded places, observe their actions and see the expressions of some faces. There you see the dance of life without a backdrop. There you see man equipped with instinct, with diverse tensions and adaptability, but mainly with the ego. If they only knew. I went outside, for the argument at the otology table was becoming too hot. A boy about seven, sickly looking, pulled at my sleeve. He was crying. "Mister, I lost my dime, and I can't get in the movie." "Why do you go to the movies? Why don't you go to school?" I asked him. "Can't," he answered, "got the measles."*

March 3 . . . From elderly Bob Coughy: "They say penicillin cures gonorrhea? Yes? Then give me a shot, but a strong one. Yes. I got it all right, got it for practicing Christianity. A good Christian is to love his neighbor; that includes the neighbor's wife, doesn't it? Who would ever suspect that woman, innocent looking, is an immoral creature. What a crooked world."

*Read a question in a medical journal: Does long travel increase the risk of miscarriage? Well, if it is in an automobile and at night, it may eventually lead to one.*

March 8 . . . Domestic felicity. It is not universal even among the families of the healing art, Dr. Coulter's for example. His injection of mustard gas for a patient with Hodgkin's disease wrought wonders. Fever disappeared, the enlarged spleen and lymph nodes were reduced in size. Diminution in the mediastinal masses was marked, and the dyspnea and dysphagia were gone.



As I passed by his house, he called me to come in. He wished to discuss the case with me. The mailman handed some letters to his beautiful wife, and she was about to open one letter. "I thought," he screamed and forgot my presence, "that you never open my mail." "I never do," she spoke defiantly, "but this one is marked 'private and personal.'" As he attempted to take the letter away from her, she ran into the next room and locked the door. Then I heard her scream.

Confusedly he said, "A man should never marry." No, he shouldn't, if he has an affair, and the erudite doctor, so people say, has one. Deceit, suspicion and the "other woman" are the cataclysmic forces that disrupt, wreck and ruin homes and entire families, mainly the children. Domestic discord is too common in American homes even if there is no competitor.

There I sat at 3:00 A.M. at the bedside of little Patrick, who was cyanosed because of a severe attack of bronchial asthma. The phone rang, and a voice said: "This is Mrs. McCarthy from next door. I see you ain't sleepin' yet. Can I come over for the rollin' pin?" "No," was the answer. "Can't spare it. My brute ain't come home yet." At that moment the door opened and the husband did come. He

smiled sheepishly as he faced his irate wife, then lit a match and stared at the floor. "And what, pray tell me, are you lookin' for," the wife asked, with one hand on the rolling pin. "Looking for an excuse, me darlin'. I have none with me." This disarmed her completely. She embraced and kissed him, then called her neighbor to inform her that she can have the rolling pin now.

\* \* \*

*March 12 . . .* And here is stammering, impractical, philosophical Dr. Gilliam, who always, when by himself, soliloquizes. He does not stutter when no one is listening. His hatred for his mother-in-law is an obsession with him, while the love of his wife for her mother borders on the abnormal.

Smoothly, he spoke when Dr. Follis and I entered, unknown to him. "Ah, that great discovery of Dr. Bogomolets of Soviet Russia, the prevention of the connective tissue from aging by injection of antirecticular cystoxic serum. Communistic Russia. Like despair vying with a lusty life. Omnipresent brutality, yet in medicine, one of the great sagas of science in modern times. That discovery will double, possibly triple human lives—ah, that marvelous blending of generations. . . ."

He suddenly looked up to his mother-in-law's framed picture hanging on the wall. "Hell, no, that witch too will live long. No. She already has lived too long. Hmm. Yesterday, she said she'd give half of her life for a pineapple. I told Margaret (the maid) to get two pineapples, and let her give up her whole damn life. . . ."

He suddenly raised his eyes and paled. At the head of the stairway stood the tall, elderly woman, listening to every word. There was a sarcastic, toothless grin playing on her thin lips. She descended the stairway as her eyes spat fire. Then she made two fists and approached him in measured steps. It sounded like the voice of doom tolling off

the last minutes. By the time she reached him, he vanished.

Follis and I left, without his knowing we were there. Said Dr. Follis: "I would not sell my mother-in-law for ten thousand dollars." Pause, then, "She is insured for twenty thousand."

\* \* \*

*March 15 . . .* The past of people and events is overdiluted by Time, but not that of bachelor maiden Carrie Holmes. The deed of yesterday is growing and is gaining unforced momentum. Middleaged, more 50 than 40, her beauty has not withered a whit. Her medical problem is vesical neck syndrome. Frequency of urination, pain and distress at the end of the act, urgency, tenesmus, strangury and the sensation that the bladder still has to be emptied. The last few days she was suffering from incontinence.

I told her that her case is somewhat unusual, for it is common almost exclusively in married women, who have had one or more pregnancies. She sat as if in a daze and then rose with a start. The lady in question, at the age of 17, young and beautiful, became the secretary of chemist Collies, and until this day was still in his employ. Collies was then young, in the middle thirties, married and childless. The couple adopted a boy who last year graduated from medicine, and today he is to be married. The son is not aware that he was an adopted child. He wanted the marriage to be a private affair, and does not want his father's secretary to be present, for reasons which are known to himself.

"I must confide in you," she spoke tremblingly. "I was pregnant, and did give birth to a child. Yes, a boy. He is to be married today. The father? My boss, Collies. No, his wife does not know that I am the mother. Neither does my son. Collies wants me to leave him and leave town. He says he'll pension me." Silence for a few seconds. Then her voice mounted, as she ex-

claimed: "My son, his supposed mother, the world, should know it today. I shall not be denied the presence of my child . . ." and out she ran weeping loudly.

*The thorny, unsuspected, tragic and painful human problems, unknown and unthought of. What effect will the news have on the young doctor, who loves his supposed mother vehemently? What will Mrs. Collies do when she learns that her husband is the real father of their adopted son?*

Spoke colleague Sarton confidentially: "Did you hear my lecture last night on the dynamic unit of mother and child, on the emotional development when the interaction of the two is to be seen in statu nascendi? I don't think my audience knew what I was talking about. Well," he sighed heavily, "neither did I."

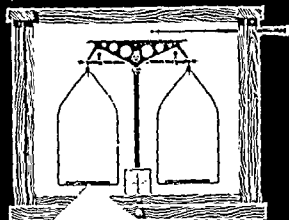
\* \* \*

*March 25 . . .* Chronicle of minor events, and maybe not so minor. It was a long, repetitious explanation I gave to pious Mr. Horringer about the blood of his pregnant wife being Rh negative, and about the Rh antibodies in her blood. Then I told him that the infant will have to be transfused with Rh negative blood if its cells are found to be sensitive to Coomb's test. The last took an hour to elucidate.

Now it was his turn. His face was red, his lips quivered, his fists, both of them, went down on the table with force, the plates shook and one fell off and broke. Looked like he was displeased. Then he sputtered: "So, you are going to change the blood the Lord put in that baby of ours. It is the Lord's will. Understand, or don't you. His will, His. Don't you dare to lift a finger . . ." he couldn't talk any longer.

That was four months ago. The child was born and was transfused, unbeknown to the God-fearing papa. The baby is doing well. "Now," he spoke smilingly, "what did I tell you. Just let Him do as He desires."

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*But Adolph does not pay his bills. I worked so hard. Lord, I did not sleep two nights because of that baby. Is this too the will of the Almighty God, that Horringer dreads to part with his dough?*

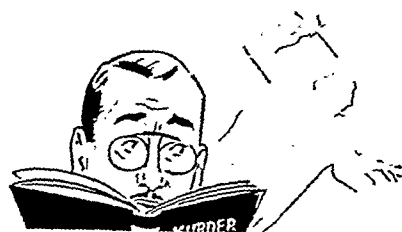
*Stella Holden, 34, a young woman within the reproductive period of life, with full ovarian activity, yet afflicted with kraurosis vulvae. And they say that this trouble occurs only after the suppression of the activity of the ovaries. It did not seem to worry her. "Is it all right," she asked, "to engage in sex life?" "But your husband is dead," I said. "So what? I am not."*

\* \* \*

*March 26 . . . Am reading a book on murders. A gift given to me by a patient who recovered from ptomaine poisoning and thinks I had something to do with his recovery.*

Murder has been defined as a smouldering fire burst into flame. The volume chronicles murders throughout several centuries. They were the lives and the violent deaths of another day, when murder was an art. That infinite conjecture of the psychology of premeditated murder. Destroying life under the impulse of the moment cannot be classed as willful murder. Half of the criminals I would class as sadist, the others are subnormals who have no conception of the value of human life.

Of all the crime books, I still think that a *Study in Scarlet* is the most readable, and the most fascinating. But why do people love to read murder stories? Yes, why did I spend two hours reading that volume and fall asleep with Jack the Ripper on one side and Sarah



Meteyard on the other?

*Murder and murderers embrace a great deal of recorded civilization. Men delight in hearing about revolting homicides, and in the execution of the guilty. I was just thinking. I can summon to memory countless men and women whose lives were badly spotted and tarnished with acts that are indefensible, yet they go unpunished and many are respectable members of society. . . . And the years rush on and on.*

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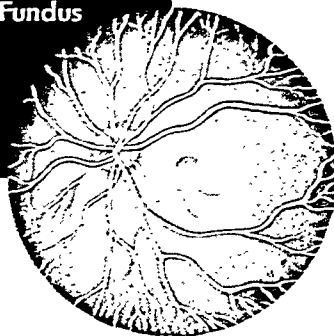


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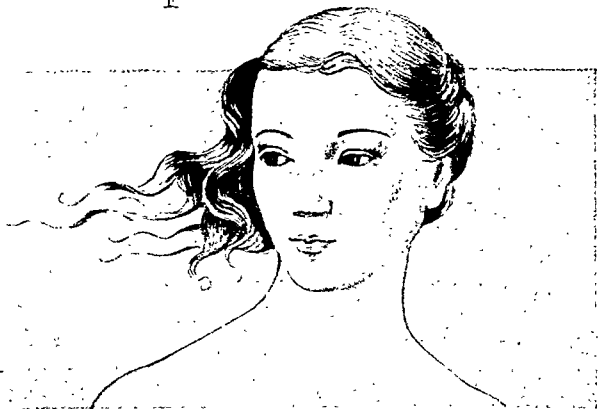
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**BIBLIOGRAPHY:** (1) Rutheford, R.N.: Am. J. Obst. & Gynec. 51:652, 1946. (2) Mason, L. W.: Am. J. Obst. & Gynec. 44:630, 1942.

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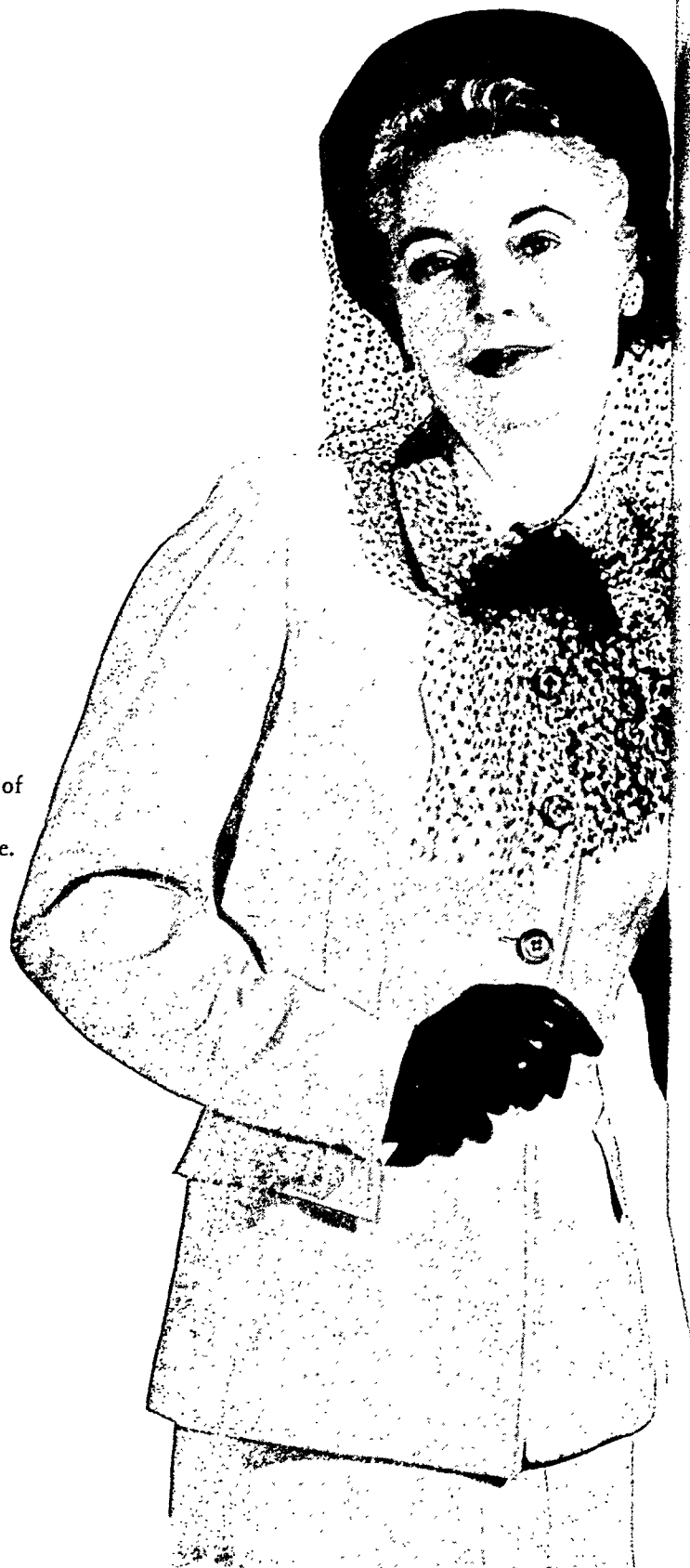
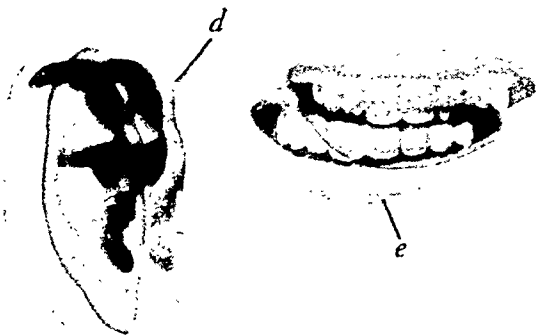


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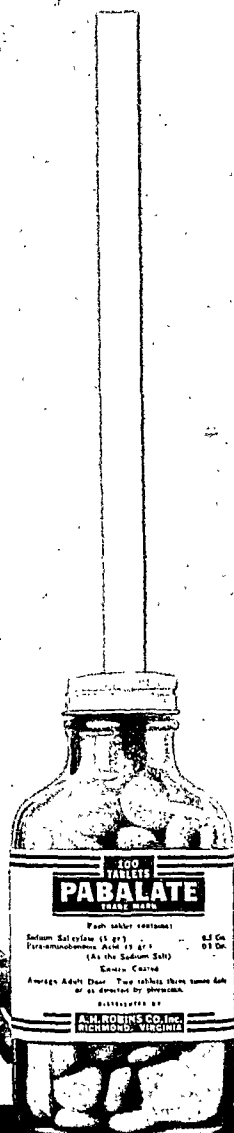
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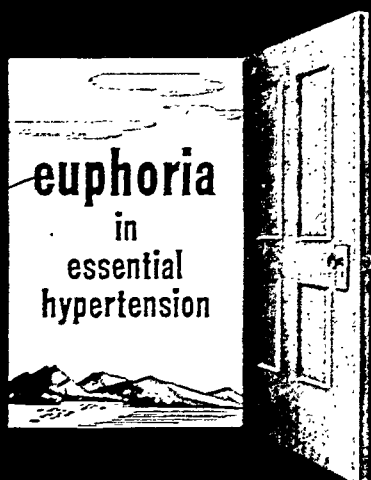
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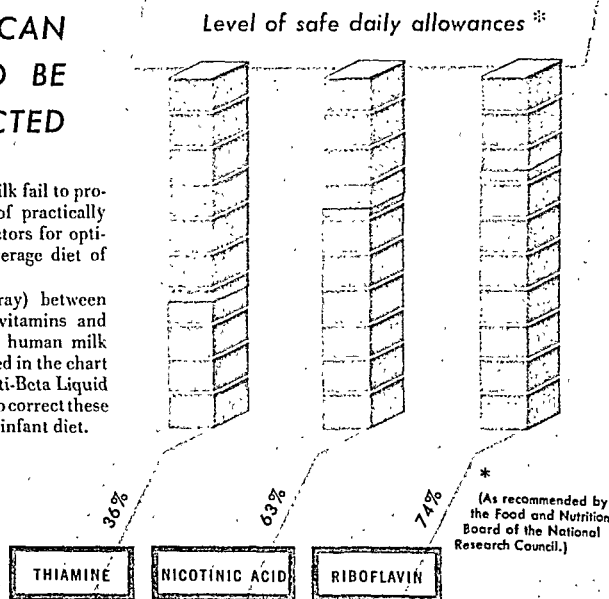
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"It is... suggested that the diet of normal neonatal infants, as well as pre-matures, be supplemented by the addition of B complex vitamins to both breast-fed and artificially-fed infants from the onset of feeding."

Kasdon, S. C. and Cornell, E. L.: Vitamin B Complex in Neonatal Feeding. Am. J. Obs. & Gyn. 66:253 (Nov.) 1948.

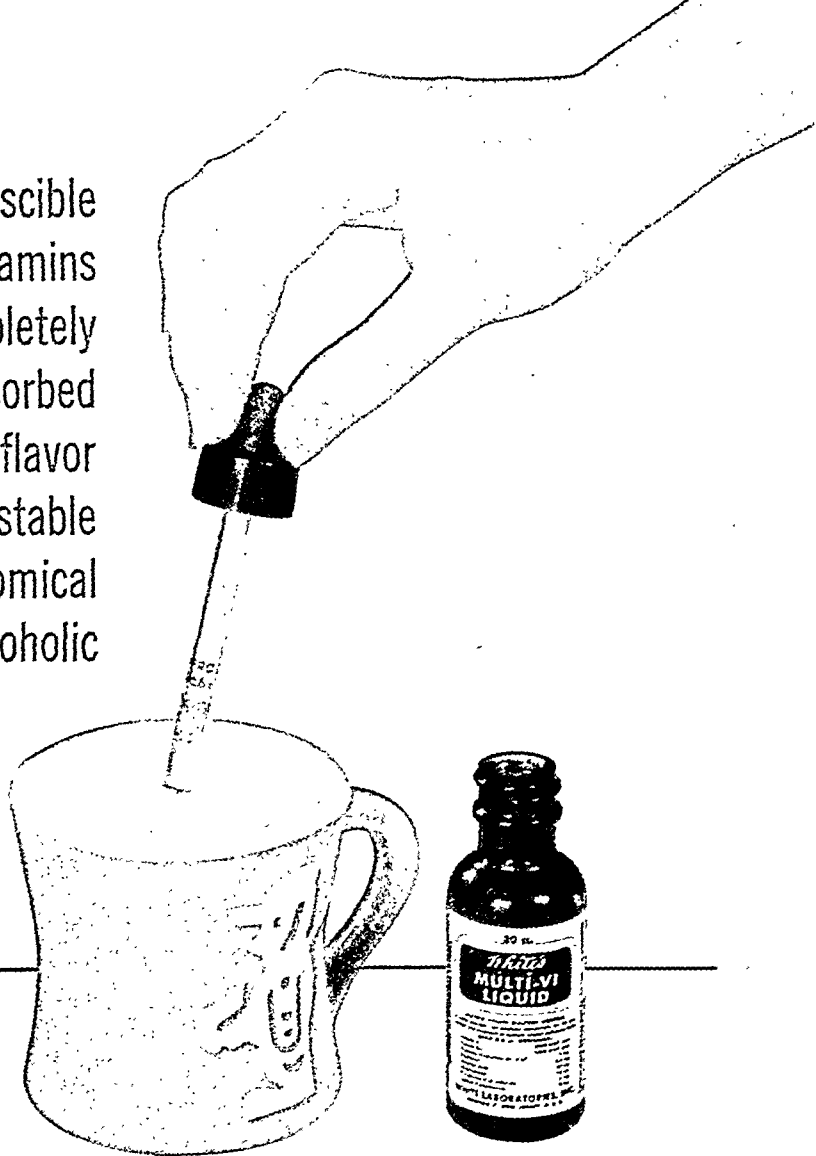
White's Multi-Beta Liquid, in a dosage of five drops or more daily, raises the infant's intake of all clinically important vitamin B factors to adequate protective levels. Notably stable, non-alcoholic, freely soluble in milk mixtures and orange juice. White Laboratories, Inc., Pharmaceutical Manufacturers, Newark 7, N. J.

*White's*

## Multi-Beta Liquid

ONE OF *White's* INTEGRATED PEDIATRIC VITAMIN FORMULAS

water miscible  
all essential vitamins  
disperses quickly, completely  
readily absorbed  
pleasant flavor  
stable  
economical  
non-alcoholic



# White's MULTI-VI LIQUID

Now these advantages are all available to physicians in this single, pleasantly flavored, *aqueous* multiple-vitamin formula in "drop dosage" form. The vitamin D content is Vitamin D<sub>3</sub> which, unlike viosterol, is chemically identical with the Vitamin D of cod liver oil. Provides average infant with adequate protective amounts of all clinically important vitamins at a cost of about two cents per day. In bottles of 10 and 30 cc.

WHITE LABORATORIES, Inc., Pharmaceutical Manufacturers, Newark 7, N. J.

One of  
White's  
INTEGRATED  
pediatric  
vitamin  
formulas

## FORMULA: Each 0.6 cc. contains:

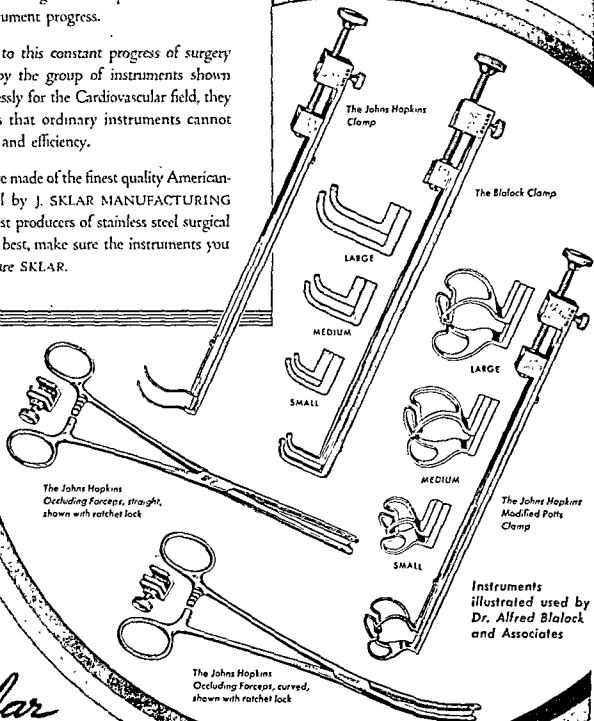
Vitamin A.....	5000 U.S.P. units
Vitamin D <sub>3</sub> .....	1000 U.S.P. units
Thiamine Hydrochloride.....	1.0 milligram
Riboflavin.....	0.4 milligrams
Pyridoxine Hydrochloride.....	1.0 milligram
Sodium Pantothenate.....	2.0 milligrams
Nicotinamide.....	10.0 milligrams
Ascorbic Acid.....	50.0 milligrams

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**Better Instruments  
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Sklar's contribution to this constant progress of surgery is well exemplified by the group of instruments shown here. Designed expressly for the Cardiovascular field, they have vital functions that ordinary instruments cannot perform with safety and efficiency.

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Instruments  
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# Orapen-250

*It is now possible* to give 250,000 units of crystalline penicillin G (potassium salt) in one coated, pleasant-tasting, buffered tablet, if you specify the Schenley product. Ample evidence supports the value of the oral administration of penicillin when given in sufficiently high dosage. Clinical reports show that even serious infections due to penicillin-sensitive organisms—such as acute respiratory illness,<sup>1,2,3,4</sup> impetigo,<sup>4</sup> gonorrhea,<sup>5</sup> and rheumatic fever (prophylaxis)<sup>6</sup>—can be treated effectively by this convenient, painless method of administration.

## ORAPEN IS UNIQUE

A special coating completely masks the taste of penicillin. ORAPEN is stable at ordinary room temperatures, eliminating necessity for refrigeration.

## REFERENCES:

1. J. Pediat. 32:1 (1948).
2. Am. J. M. Sc. 213:513 (1947).
3. J. Pediat. 32:119 (1948).
4. New England J. Med. 236:817 (1947).
5. New York State J. Med. 48:517 (1948).
6. Lancet 1:255 (1947).

## Orapen-250

### Orapen-100 • Orapen-50

[PENICILLIN TABLETS SCHENLEY]

Each containing 250,000, 100,000, or 50,000 units of Penicillin Crystalline G, buffered with calcium carbonate.

#### ORAPEN-250:

Available in bottles of 10 and 50.

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Available in bottles of 12 and 100.

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Available in bottles of 12 and 100.

SCHENLEY LABORATORIES, INC.

350 FIFTH AVENUE • NEW YORK 1, NEW YORK

## CHECK LIST

*for choice of  
a laxative*

Phospho-  
Soda  
(FLEET)

### TYPE OF ACTION

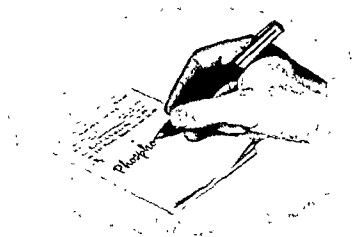
- ✓ Prompt action
- ✓ Thorough action
- ✓ Gentle action

### SIDE EFFECTS

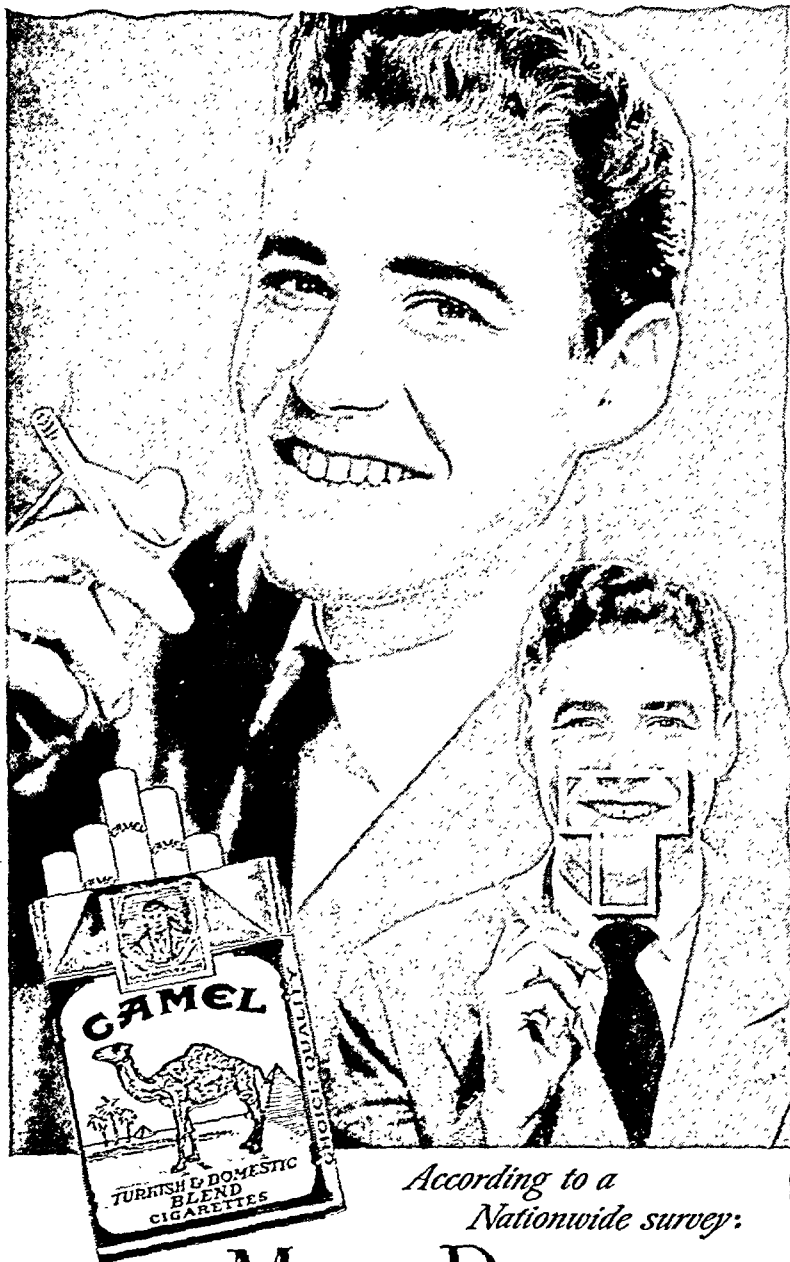
- ✓ Free from Mucosal Irritation
- ✓ Absence of Constipation Rebound
- ✓ No Development of Tolerance
- ✓ Safe from Excessive Dehydration
- ✓ No Disturbance of Absorption of Nutritive Elements
- ✓ Causes no Pelvic Congestion
- ✓ No Patient Discomfort
- ✓ Nonhabituating
- ✓ Free from Cumulative Effects

### ADMINIS- TRATION

- ✓ Flexible Dosage
- ✓ Uniform Potency
- ✓ Pleasant Taste



# How mild can a cigarette be?



**I**n a recent coast-to-coast test, hundreds of men and women smoked Camels—and only Camels—for 30 consecutive days. These people smoked on the average of one to two packs a day. Each week, during the entire test period, throat specialists examined these Camel smokers. A total of 2470 careful examinations were made. The doctors who made the throat examinations of these Camel smokers reported:

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SINGLE CASE OF  
THROAT IRRITATION  
due to smoking  
CAMELS!”**

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SMOKE CAMELS**  
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Doctors smoke for pleasure, too! And when three leading independent research organizations asked 113,597 doctors what cigarette they smoked, the brand named most was Camel!

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Smoke Camels and test them in your own “T-Zone” — T for taste, T for throat. If, at any time, you are not convinced that Camels are the mildest cigarette you have ever smoked, return the package with the unused Camels and we will refund its full purchase price, plus postage. (Signed) R. J. Reynolds Tobacco Company, Winston-Salem, North Carolina.

used. Consequently the se and uncertainty associated with the eliminated. This outfit is ready to take want them — without battery worries.

GALVANOMETER has more than ample sensitivity of reducing amount and ad bs tel ted n fa

They perform a more complete record receiver heretofore requiring a more complete simplifying and expediting the entire organization of the

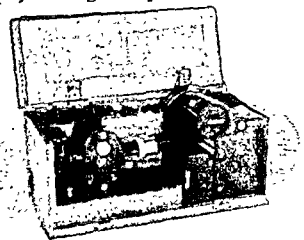
"Electrocardiography is essential to the modern study of heart disease . . . is the last court of appeal and its judgment is, practically speaking, infallible."

—Sir Thomas Lewis

## Even Truer Today!

THE test of time has proved the truth of the statement made by Sir Thomas Lewis more than a quarter-century ago. Today no heart examination can be considered complete without the Electrocardiogram.

Much of the steady development in importance of the science of Electrocardiography during this period may well be



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ACTIVE INGREDIENTS  
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Oil Cinnamon - Oil Cloves  
Alcohol 5%

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MOUTHWASH AND GARGLE  
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**DOCTOR...**

*Lavoris coagulates,  
detaches and removes  
germ-laden debris,  
leaving tissues  
cleansed, refreshed  
and invigorated.*

*Distinctive Cleansing Action*

DETACHES AND REMOVES GERM HARBORING FILM FROM MOUTH AND THROAT

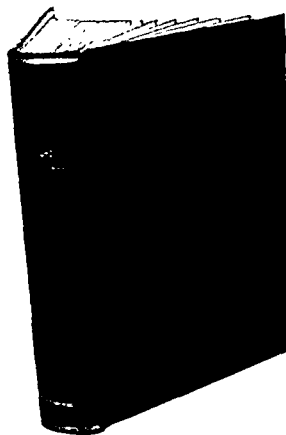


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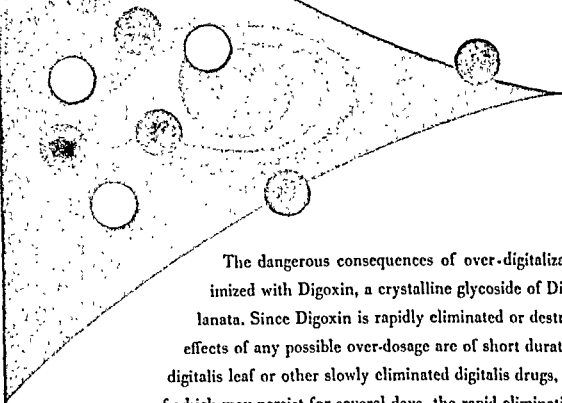
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Official Journal of the Interstate Postgraduate Medical Association

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## minimizing the hazards of over-digitalization



The dangerous consequences of over-digitalization can now be minimized with Digoxin, a crystalline glycoside of Digitalis lanata. Since Digoxin is rapidly eliminated or destroyed, the toxic effects of any possible over-dosage are of short duration. Unlike digitalis leaf or other slowly eliminated digitalis drugs, the toxic effects of which may persist for several days, the rapid elimination of Digoxin reduces to a few hours the effects of excess dosage. This rapid destruction does not, however, adversely affect the therapeutic action of Digoxin because the effect of a single daily dose is sufficiently sustained to maintain most patients on an even level of digitalization.

Possessing all the therapeutic virtues of digitalis leaf, Digoxin offers the additional advantages of (1) accurate and easy control, (2) minimized local gastric irritation, (3) prompt and uniform absorption, (4) rapid elimination.

# DIGOXIN

a crystalline glycoside of Digitalis lanata



BURROUGHS WELLCOME & CO. (U.S.A.) INC. TUCKAHOE 9, N. Y.

### average dose

Oral Digitalization: 0.75 to 1.5 mgm., followed at 6-hour intervals with further doses of 0.25 mgm., until the desired effect is obtained.

Intravenous Digitalization: 0.75 to 1.0 mgm. in a single dose followed in 6 hours by 0.25 to 0.3 mgm. if necessary.

Maintenance — oral or intravenous: 0.25 to 0.3 mgm. daily, to meet individual needs.

Oral Preparations: "Tabloid" brand Digoxin, 0.25 mgm. (gr. 1/260 approx.) Bottles of 25, 100 and 500.

For Intravenous Use: "Wellcome" brand Digoxin Injection, 0.5 mgm. (gr. 1/130 approx.) in 1 cc. Boxes of 12 and 100 ampuls.

\*Formerly "Hypoid" brand

## description

Quarter-sected tablets,  
each containing  
*Hyoscyamine HBr*, 0.4507 mg.,  
*Atropine sulfate*, 0.0372 mg.,  
*Scopolamine HBr*, 0.0119 mg.

## indication

Symptomatic treatment  
of postencephalitic or  
arteriosclerotic parkin-  
sonism. Precise formula  
and pure ingredients  
make dosage easy to  
control. Dose must be  
determined separately for  
each individual case.

Supplied: Bottles of 100  
and 1,000 tablets.

Sharp & Dohme.  
Philadelphia 1, Pa.

## actions

Relieves or diminishes tremor,  
rigidity, sialorrhea, torsion  
spasms and other symptoms of  
parkinsonism or paralysis agitans.

# rabellon<sup>®</sup>

compound of belladonna alkaloids

SHARP  
& DOHME

# Clinically approved

Today, there is a wealth of clinical evidence supporting the use of Meonine as a supplement to the protein-rich diet usually prescribed for liver damage associated with malnutrition, pregnancy, allergy, certain chemical poisons, and alcoholism.

Typical of this evidence is a paper\* in which the authors reported that, in cirrhosis patients receiving methionine supplement, regeneration of the liver parenchyma resulted, irrespective of the amount of protein and vitamins in the diet.

Literature on request. Meonine is supplied in 0.5 gram tablets. Wyeth, Philadelphia, Pa.

\*Beans, A. J., and Endicott, E. T., Histologic changes in the livers of patients with cirrhosis treated with methionine, *Gastroenterology* 9:718-735 (Dec.) 1947



# MEONINE